

CANADIAN Journal of Fabrics

THE JOURNAL OF THE
Textile Trades of Canada.

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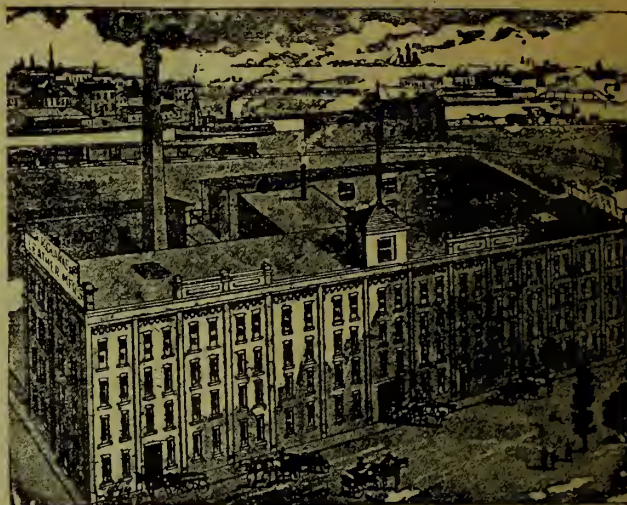
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THE CANADIAN TEXTILE DIRECTORY

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Editorial.

WOOL.

The Canadian wool market at the leading centres of
the trade has almost a holiday air of leisure and inactivity
in contrast with the feverish condition which characterized
it at this period of last year. Wool is being taken up from
the producers quite eagerly in the outlying country dis-
tricts, but after passing into the hands of the local buyer
or manufacturer, it seems to have little further effect on the
market. The reason is that when exporters are quoting
at 16 cents, and local dealers are competing with each

other to secure the wool at 17 to 19 cents, naturally the
local dealer does the trade. Recently 70,000 lbs. of Cana-
dian wool passed into the hands of a Canadian dealer on
the Boston market at 27 cents. What this should mean
to Canadian prices is at once evident when we deduct the
duty of 12 cents per pound and freight and handling ½ cent
each per pound.

The general storekeepers throughout the country
have been buying freely ever since the clip came on the
market, even those who do not usually handle wool being
incited to trade in it this year by the fact that all local
dealers who handled wool last season made money out of
it. Once started buying a country storekeeper cannot
shade his prices as the city dealer would. Local patriot-
ism demands that he should attract trade to his village
rather than to the neighboring sections, and frequently
competition of one small dealer against another maintains
prices within the town even more strongly than does the
competition of two neighboring points. Buying at a price
which prevents a turnover at a profit does not always imply
a serious loss to the storekeeper. He rarely pays cash, or
more than part cash, and he can afford some apparent loss in
order to close long standing accounts or to dispose of
goods on his shelves. The added price is often looked on
in the nature of a bonus, given in order to retain profitable
custom at the grist mill, sawmill, hotel or other business
of the storekeeper.

The local mills are also competing and maintaining
prices beyond what is apparently a profitable basis. In
many instances the mills, however, are actuated much in
the same way as the general storekeeper. It may be
necessary to retain local trade or custom work would be
lost; the manufacturer may be obliged for political reasons
to retain his popularity by avoiding the appearance of
price-cutting, or he may be interested in other industries.

The strength displayed by wool at present may also
be somewhat owing to a strong feeling among the growers
who have realized good prices last year and are determined
to get as much as possible this year. Statistically, how-
ever, their confidence does not appear to be justified.

INTERVIEW WITH M. J. TAYLOR, OF JOHN TAYLOR & CO.

After visiting the leading British and foreign textile
centres in Europe, M. J. Taylor, of John Taylor & Co.,
Toronto, has returned to Canada very well satisfied with
the prospects of trade both at home and abroad. In an

interview with the CANADIAN JOURNAL OF FABRICS, Mr. Taylor stated that the British manufacturers were adapting themselves to the changed conditions brought about by the McKinley tariff, and Bradford and Huddersfield were gradually reviving from the shock which had been dealt their trade by the imposition of the new duties. Canadian manufacturers are not apparently so far behind in the industrial race as the pessimistic among us sometimes aver. Mr. Taylor finds that Canadian mills are adding largely to their plants along the newest and most approved lines. Many of them are equipped with machinery which is fully equal to that possessed by their great rivals across the Atlantic. Dyestuffs being on the free list helps to lessen the cost of production, and the fact that all new colorings and new departures in methods are brought before the attention of the Canadian producer almost as soon as to his British competitor, should enable us to hold our own fairly well. Of course allowance must be made for the limited market and the great variety of output which that limitation enforces.

Carpets from the United States are no longer a factor in the Canadian market, and probably will not be seen at all here for some time, except job lines, which for some special reason are sent out of the country to be slaughtered. The new wool duties in the United States have raised the cost of carpets entirely beyond an export basis. The carpet market of the world is of course affected by the shortage in hemp occasioned by the Spanish-American hostilities in the Phillipine Islands, and this shortage will be felt more strongly in the United States, so that prices there will probably advance still further. The Canadian carpet manufacturer is subjected to a particularly severe form of competition by means of the sale in Canada at bargain prices of imported goods, which are for the most part seconds, and could not be offered on the home market by the producer without injuring the reputation and prices of his regular output. As no one but an expert can detect a second in carpets of this class, the competition is most injurious.

The soap manufacturers of Canada are keeping abreast with the times also, Mr. Taylor finds, and are offering the manufacturers soaps quite equal to those on the British market. These soaps are also produced by the most improved methods, and the bi-products, such as glycerine, etc., are saved.

Mr. Taylor commented on the prevailing tendency of commerce in Great Britain towards the formation of huge joint stock companies which carry on, under one management, the various businesses of the firms which become a part of the new organization, thus effecting large savings in management and avoiding the unnecessary duplication of agents, travelers, etc. The most recent organization of this kind of interest to the textile trade is the British Dye-wood and Chemical Company, which has been formed to carry on the business of E. D. Milnes & Bro., Bury; Mucklow & Co., Bury and Glasgow; John Dawson & Co., Alloa, and W. R. Scott & Co., Glasgow, with capital stock of £570,000. The employment of such a mass of capital as this should enable the new company to carry on pro-

duction on a most profitable basis and at the same time to place the product on the market at very reasonable rates.

THE AMERICAN COTTON CROP.

The statistics which are periodically issued by the United States Agricultural Bureau, form the means by which an approximate estimate of crop prospects can be arrived at. It may fairly be presumed that any error in the method of estimation is a fairly constant one, and that, for that reason, approximate comparisons can be made. According to the figures supplied a short time ago, only 92·35 per cent. of the area planted last season has been devoted to the cultivation of cotton this year, the acreage being actually 22,400,000, against 24,320,000. On this showing it would naturally be expected that there would be a decrease in the quantity of cotton grown, and that the supply would be to that extent limited. As a matter of fact, no such decrease is spoken of, and the condition of the plant is reported to be better than at any time during the past five years, with the exception of 1897. The increase in the yield which follows this state of things will more than compensate for the decreased acreage, so that, unless there is during the next two months considerable damage, there is not likely to be any actual decrease in the quantity of cotton harvested. It may therefore be taken for granted that there is not likely to be much chance of a scarcity of American cotton for the next season.

COTTON FIRES AND COTTON BALES.

BY R. H. SCOTTER, C.E.

In order to appreciate the importance of adequate fire preventative measures in cotton warehouses, it is necessary to point out the enormous extent of the cotton trade in Liverpool. In the early days of the growth of the cotton manufacture, Manchester, South-East Lancashire, and North Cheshire seemed marked out by nature as its ideal situation. An abundance of running water, a damp climate, and the presence of an industrial community assisted among other causes to make Manchester what it is to-day. Now at least three quarters in value of the raw cotton imported for use in South Lancashire comes from the United States of America, and of this amount all but a very small proportion passes through Liverpool. Liverpool, it must be remembered, is a port of transit, as owing to the various causes it is not possible to manufacture the cotton there. It is, however, warehoused for some time pending delivery to the mills inland. In 1896, the total weight of cotton imported into the United Kingdom was 15,668,900 cwt., valued at £36,272,039; of this amount 12,446,000 cwt., valued at £27,965,000, came into the country from the United States. The

*Published by the British Fire Prevention Committee, Edited by Edwin O. Sachs.

total imported into Liverpool amounted to 13,384,000 cwt. This arrived from the following countries, America, 2,900,688 bales; Brazil, 72,996 bales; Egypt, 398,954 bales; West Indies, 46,560 bales; East Indies, 58,126 bales. It generally happens that a considerably greater quantity is imported than can be disposed of to the manufacturers, as for instance, at one time, March 24th, 1898, it was estimated that 1,175,439 bales were stored in Liverpool warehouses, 1,073,535 of which were bales of American cotton. This gives some idea of the warehouse accommodation necessary, and also some idea of the value of the "risks" involved.

A few years ago, 1891—2, Liverpool seemed to be suffering from an epidemic of cotton fires; on one day, June 13th, 1892, no less than three serious fires happened and the fire brigade was kept continuously at work for twenty-seven hours. The cause of most of these fires could, however, not be discovered. In 1892—3 matters eventually became so serious and the destruction of property so enormous, that the salvage association offered substantial rewards for evidence regarding the origin of any outbreak, more particularly as to the carelessness (if any) of employees. These rewards resulted in it being proved that a great number of cotton fires were the result actually of carelessness on the part of warehousemen. A hot pipe, a match thrown away unextinguished, or sparks from a lighted tobacco pipe, have no doubt been the immediate cause of much of the loss. It was seen that one of the first remedies would have to be the appointment of several fire inspectors, and the rigid application of the rules as to smoking, open lights, etc., with the enforcement of which they were entrusted. The benefits of this action may be seen from the following figures, showing the number of cotton fires occurring in Liverpool. The decrease of fires after 1892—93 is most marked.

Before action was taken. 1890—1893.	After action was taken. 1894—1897.
1890.. . . .14	1894.. . . .10
1891.. . . .13	1895.. . . . 3
1892.. . . .32	1896.. . . . 4
1893.. . . .18	1897.. . . . 6

It is also interesting to note the value of property at risk at actual fires since 1893. Taken roughly, the value of buildings and contents at stake was as follows:

	Stock.	Buildings.
1893.. . . .	£771,625.. . . .	£54,892
1894.. . . .	194,845.. . . .	22,556
1895.. . . .	28,600.. . . .	3,866
1896.. . . .	97,850.. . . .	11,155
1897.. . . .	88,776.. . . .	17,500

Setting aside the actual cause of fire by open light, self-combustion or otherwise, the spread of an outbreak is primarily due to insufficient packing and inadequate compression.

Now it is a remarkable fact that nearly all the damage by cotton fires in Liverpool only affects Ameri-

can cotton, though the aggregate of bales from other countries is quite one-fifth of the total quantity shipped to that port. Egyptian and Indian cottons are very seldom affected in the great Liverpool conflagrations. This is largely due to the fact that the latter classes of bales are more securely and densely packed before being shipped to Europe, and to my mind no really successful attempt can ever be made to lessen the extent of a cotton fire while raw cotton is packed in the United States in the present unsuitable manner in bales of the "turtle-backed" description. The old American bale is produced in a compress which masses together under a sudden pressure of 2,000 tons per bale, cotton fiber, sand, and unfortunately any amount of foreign matter which dishonest or careless packers may see fit to introduce. During the process it is impossible to exclude an appreciable quantity of air. This air and the foreign substances already mentioned as present in the bale, together constitute, on a rise of temperature, two sources of concealed danger against which ordinary preventive measures are applied in vain. Added to these dangers from within there is also the danger of the inefficient outer covering, as the bales are generally only sewn up in coarse jute. This jute is in itself highly inflammable, but it also allows the cotton to get through, with the result that the outer surface of a bale is fluffy and only too easily catches fire. Again, the size, weight and shape of these bales necessitate many processes during transportation which considerably add to the risk of fire. In loading and unloading a free use of hooks is made and these are responsible for the ragged condition in which bales arrive at the warehouse or mill. It is this extra raggedness which again assists the spread of flames.

Anyone who may have witnessed the commencement of a cotton fire and seen the lightning rapidity with which the fire spreads along the warehouse floor, will appreciate the great danger from these ragged ends.

The "waste" occasioned by the ragged bales makes the floors literally a tinder line, and with even the most careful of sweepers the floors cannot be kept clean where the "turtle-back" bale is used. Recognizing the great necessity there is for a different system of packing cotton, if we are to take steps towards preventing cotton fires in the future, I shall try to briefly describe how the new style of bale is made which is at present attracting the attention of the cotton world, and the makers of which claim that its adoption will materially reduce the risk from fire to which cotton is at present exposed.

This so-called "round," or more properly speaking the "cylindrical" bale is produced by a new hydraulic press. The cotton coming from a gin, just touches the underside of the condenser wheel or drum and is immediately deposited between the two aprons of a bat former; the air and dust pass out through the meshes of a wire cloth above. The two aprons of the bat former

carry the cotton down, gradually compressing it, and the bat then passes between a compression roll and a stationary roll. A solid bat of cotton is thus formed which again passes on to a bale now being formed between the two main compression rolls. The pressure of the bale is produced by an hydraulic cylinder and as the bale increases in size, it regulates automatically the pressure required. By an ingenious contrivance the pressure can be regulated up to a maximum of 200 lbs. per square inch. The standard "round" bale produced is cylindrical, weighs 425 lbs., is 4 feet long, 2 feet in diameter, and its density is about 35 lbs. per cubic foot, or 50 per cent. more dense than a best compressed bale on the old system, although the average pressure exerted in making the "round" bale is only about 10 tons, as compared with 2,400 tons in making the "compress" bale.

As the tendency of modern fire prevention methods is to reduce, rather than increase, the storing capacity of each separate room in the warehouse, this advantage as to bulk is important. The Liverpool Fire Prevention Act grants the maximum of 4,000 sup. feet for warehouses, 6,000 feet for sheds of two floors, and 7,000 square feet for ground floor sheds only. As an example of what may be done in packing these bales in a small space, I may mention that in December, 1896, the largest single truck load of cotton ever carried was conveyed by the Illinois Central Railway in a box truck, the bales being made on the "round" bale system. It consisted of 160 bales and weighed 68,628 lbs.

Now the principal feature of this bale in relation to fire prevention is that it is claimed to be both fire and water proof. It is formed in a short space of time and not left about the yard to pick up dirt, sand or wet; it contains no compressed air; it is much better packed and secured, and is not only less liable to self-ignition, but should the warehouse or shed in which it may be stored be attacked by fire we have ample proof from theory, from experiment, and from practical experience, that this form of bale resists the attack of fire admirably. Various experiments have been made in placing a "turtle-back" and a "round" bale on the same fire. In favor of the former it may be said that should a fire have worked its way into a bale before it is discovered, a dash at the bands with a hatchet will release the cotton and allow water to be thrown on the burning spot. On the other hand the "round" bale would have to be unwound in a similar contingency. But it must be remembered that it is denied that a fire can penetrate a "round" bale, and if a non-inflammable covering be used in the packing, no doubt this risk will be reduced to a minimum.

An interesting experiment was made last year in Liverpool, where a cylindrical bale and an ordinary bale were both exposed to the same fire. After half an hour the fire was extinguished and the bales rolled off. The old bale fell off with bands complete, but the new bale became unrolled in the process of removing it

from the furnace and the cotton blazed up. However, only a small portion was found to be alight, and this was extinguished in a few seconds, while the cotton in the old bale was still burning next morning. Prior to the test the old bale weighed 410 lbs., of this, 261 lbs. of sound cotton was obtained after the fire, showing a loss of 36.3 per cent., while the "round" bale, which weighed 504 lbs., lost 22.2 per cent., or 112 lbs. by damage from the fire.

This shows in favor of the new system and taking into account the greater density of the cotton, and under recent improvements the non-combustibility of the Hessian cloth, chemically treated, with which it is suggested all cylindrical bales should be encased, the latter have a decided advantage in the matter of fire prevention.

But leaving experiments which have been carried out in the interests of insurance offices, both in this country and America (with the result that the offices have reduced the premium on round bales by one-half), I will just mention a fire which occurred in the Rock River Cotton Co.'s works at Janesville, Wisconsin, in July last year. The official report says "the main building with machinery became a total loss. The cotton, some 40 round bales, which was lying where the fire was the hottest, and could not be reached until after the building was entirely burned out, was entirely saved. When found, only the covering was gone and about an inch of cotton scorched, the rest of the cotton perfectly dry, white and wholly uninjured. The bales with ends cut, opened as well as if they had never been burned. The water had not penetrated any at all." This latter statement is, perhaps, of primary importance, for it is well known how often more damage is done to the cotton by water than by actual fire. To repeat, I hold that the spread of a cotton fire can only be limited by giving more attention to the packing of bales, which not only governs the extent of the spread, but the extent of the salvage after the fire. As the expense of improved bales is often argued, I would only add that, as a matter of fact, what with the easier portorage, reduced insurance rates and other economies which the new bales allow for growers, shippers and merchants alike, their introduction means a material saving to all concerned, quite independent of the lesser risk, which should count for something, considering the inconvenience generally caused by fire loss, no matter how well goods may be covered by insurance.

THE STEAM GIG.

The steam gig is used almost exclusively for steaming kerseys, beavers and face goods. The upright steamer is effective, but requires too much unnecessary handling of the goods back and forth from the roll-gig, unrolling, wet gigging, and rolling again. The principal object in steaming any of the modern types of steam gigs is to keep the steam right, the cylinder

in good working condition, and the adjustment of the goods correct. The common form of steam gig consists of a perforated copper cylinder on each end of the machine, and a stiff brush in place of the gig cylinder in the center. The couch roll jacket, and the first and second press felts, should be in good condition. The press felts should be light in make and have the nap or pile well raised. To obviate the tension in the direction of the length of pieces, care should be taken to prevent undue strain at the points where the cloth is transferred from one section of the machine to another.

Especially in the steaming of heavy beavers, a good supply of steam is necessary. The mistake of making the steam pipe connections too small is frequent. Supposing, with a half-inch pipe, we had a 1,000 pound pressure, and had an unlimited supply of steam there? Would we get unlimited power through that half-inch pipe? No. The quantity of steam which would run down would be limited. Only a certain quantity could flow, because of the size of the pipe being small. If there were a pipe twice as large we would get twice as much steam. And if the pressure were twice as great, we would obtain about twice as much steam also. If the head were only of 500 pounds' pressure, we would get about one-half as much steam per minute as with the pressure at 1,000 pounds. With the machine right and steam pipes in order we are ready to begin work.

There are some specific imperfections that fail to come to view in the goods until the cloth is on the steamer or has just left it. These defects happened the same on the old-fashioned steamers in which the cloth was rolled on perforated metal rolls of about 2 or 2½ inches in diameter. One trouble is unevenness, due very often to improper flocking at the fulling, and yet often blamed to the steaming process, because the trouble is not noticed until the goods are steamed. I do not know of anything as trying for the finisher as a piece that does not steam out even. Pieces that are not flocked, or are flocked only a little, very seldom give trouble in steaming, if the steamer is all right, but pieces that are flocked very heavy, or are set back in the mill and flocked, sometimes steam out uneven. If we are sure that the steamer is all right, let us go back to the fulling mill and see what the fuller has been doing. Generally we find the trouble here if he has been putting on the flocks too much at a time, or has not been running them long enough in dry flocks, or has not been putting on soap enough to start the grease all through the piece. When the grease is started, the fuller will take the flocks more than where it is not. If there is too much soap, it will make them sticky, and, when running round, they will not open out. The part that is outside will get more, and the action of the steamer on the steam gig will do the rest.

It may be necessary to go back as far as the warping in order that the cause of streaks in the direction of the warps in the goods may be located, says a writer

in the Textile Manufacturers' Journal. Irregularities in the tension of the threads are one of the evils, and varying sectional lengths are another. The favorite point of attack is the rack, the particular points, the friction-paddles, and the object, differential friction. This differential friction must not only be perfect in itself, but it must also be correspondingly alike with all the spools in the rack. If the point of frictional contact were always the same, possibly this result might be attained. But it is not; it is greatest on the full-sized spool and gradually diminishes until the minimum is reached. The uneven tension on the warp yarns is best overcome by the use of improved frictional forms of dresser spools.

Another class of irregularities, which bother the men at the steaming and which are often laid to supposed bad work of the steamer, is shaded and off-color stock. I have known the colors to be affected in steaming and off-shades to be produced; but nine times out of ten the irregularities are due to mixing lots of stocks from which the yarn in the goods was spun. For instance, a lot composed of Australian fine is rarely put down by itself, but generally is mixed with domestic wool, the object in putting in domestic being to give the yarn a fuller or more lofty appearance. When a lot has been made up, it ought to be entirely run out by itself. But the trouble is that this is not always done. The superintendent will come along through the mill and look over the stock and order that lot to have some different quality of wool put in. The consequence is the grade is changed. Now, the grade of any lot has no business to be allowed to fluctuate, and if the quality of a lot has been determined on it is the superintendent's business to see that it is kept up to the standard. If he wants to change, let him run one lot out and start another one, getting every advantage of the change. The change of the lot, when part of it is on the cards, means that the two kinds of yarn will be made, and these two kinds will result in irregularities at the steaming and finishing that no man can prevent. Hundreds of thousands of dollars are expended every year in our mills in various ways of improvements; this is all right. I believe in keeping our machinery well repaired with all necessary improvements, but I believe, at the same time, that it is not policy to neglect one of the most important parts of manufacturing. It seems to be a settled fact with many of our mill men that the very excellent improvements that have been applied to cards, drawing frames and spinning will regulate any and all imperfections liable to occur in the picking rooms. If that is the case, why is it that we find, in some of the best appointed mills, yarn that shows an unevenness of from two to five numbers, and a variation from 5 up to 25 per cent.? I am convinced that mismanagement is more the cause than anything else.

If the delicate descriptions of colors are apparently affected in the steam finishing process, I would find out how those particular colors were applied before mak-

ing any changes in my methods of steaming. Trouble is experienced frequently in the use of light-colored dyestuffs from unevenness. If a bath be made up and the wool entered, it will be found that only a portion of the coloring matter goes on to the wool, but that a large amount is left in the bath. This is the case with brilliant pinks produced by the use of the eosine dyestuffs. There are a number of these, and they vary from a very blue shade down to one that is quite yellowish. If a strong acid, such as sulphuric (oil of vitriol) be added, and the wool re-entered, it will be found that the color goes on very rapidly, and that the bath is left nearly colorless. This shows not only that an acid is necessary for the full development of the coloring matter, but shows also that a strong acid acts so quickly that the coloring matter goes on too quickly and thereby causes unevenness. This unevenness is what bothers, particularly on steam-finished goods. The best remedy is in the use of a weak organic acid, as acetic, in the bath, which causes the color to go on slowly and uniformly. If you use steam gigs it is best to use only the ones that are large and well and strongly built. None but the best machines should be used.

WOOLENS FOR WINTER WEAR.

The under weft of a thick cloth being generally of looser yarn, and readily felting when fullled, it is necessary to use a yarn of equally quick fulling tendencies for the upper side. On the other hand, if the yarns on the face are slack and full readily, a slow-fulling yarn must not be selected for the under side, or the cloth will shrink into wrinkles. Consequently a proportion of shoddy is mixed with the under weft, the kind of admixture practiced depending on the feel required of the cloth—e.g., for hard feel, Thibet and low-grade shoddy, or mungo; for soft, flannel and croppings.

In securing a good felting surface, a deal depends on the yarn, since if this be too fine, it will not produce enough body; while excessively coarse yarn gives a rough and uneven appearance to the surface. To prevent lateral shrinkage in fulling, longitudinal shrinkage should be encouraged by cuttling. The goods must be well soaped and frequently measured while in the mill, and tented to prevent wrinkling. As when dyed in the piece goods are apt to shrink on washing, milling should not be pushed too far, and it is always advisable to dress with fuller's earth after soaping and rinsing. Olein is often advisable to use in filling, especially for thick goods and where the pieces have been mordanted or boiled too long with acid. Semi-woolens and goods containing much shoddy felt very slowly and easily become hard. With goods dyed in the piece, and consisting of shoddy under weft, the white upper surface is often discolored in washing by the bleeding of the dyed shoddy, and must in such case be drained at once in the hydro-extractor and dried, says a writer in *Leipziger Monatschrift*.

Winter goods are mostly raised on both sides, the face being finished first, which is a wrong plan to adopt, since by raising the under side first the cloth is made more yielding, can be held better, and the cards engage more uniformly in the upper felted surface. The best plan is to pass the under side through the raiser two or three times, then raise the face, and finally give the under side a couple of turns more, with care. When the goods are too wrinkled to raise evenly, they must be stretched until smooth, wound, full width, around a steaming roller laid all night in hot water, and roughed after treatment in the hydro-extractor.

After roughing, the goods are cropped, care being taken not to shear too deep at a time, or the appearance will be spoiled. In calendering, a little moisture is advisable to preserve the proper luster, and the cylinder press is generally sufficient. For steaming, a pressure of 1—1½ atmospheres, acting for twenty to thirty minutes, is best in the case of dull goods, or two atmospheres for fifty to ninety minutes for lustered goods; in either case the pieces are left on the rollers for a couple of hours or so to cool. In the final cropping each piece is best passed through two or three machines in succession. When piece dyed goods are steamed unusual care is necessary, the dye not being always fast, and steeping in water at 50 to 70 degrees C. for several hours is often preferable. The finer the goods the lower the temperature that may be used, though higher temperatures produce greater luster.

TWO CRYING EVILS.

At the summer gathering of the Maine Woolen Manufacturers' Club recently, a subject was discussed which, while evidently of deep interest to manufacturers of men's wear woolens, is also closely connected with the prosperity of manufacturers and wholesalers in branches of the textile industry more intimately related to the dry goods trade, says the *Dry Goods Economist*, New York. It appears that the woolen manufacturers of Maine have for a long time suffered severely from the tendency of the purchaser to cancel orders without any regard for the obligations under which he placed himself when he allowed the order to be booked. In the men's wear woolen trade, as in other lines, orders according to the special styles and patterns desired are placed ahead so that the mill may have time to make up the goods and have them on hand when the purchaser calls for them. Before the goods can be delivered, however, it may happen that the purchaser, believing that styles will change or that there will be a lessened consumption, or for some other reason, cancels his order and throws back on the manufacturer's hands either the completed goods or the material, in various stages of manufacture. Maine manufacturers claim that for years it has been impossible for them to bank to any certain extent on the future or reckon upon the orders they receive.

This year the cancellation evil appears to have reached an especially flagrant stage, the outlook, in the opinion of purchasers, having, on the breaking out of war with Spain, suddenly changed from exceptionally good to "mighty onerous." Cancellation after cancellation, according to Mr. Anderson, president of the Maine Woolen Manufacturers' Club, was the result. This subject of cancellations is closely allied with the readiness of certain houses to return goods, a matter which formed a prominent topic of discussion at the special meeting of the dry goods men held at Detroit recently, in connection with the convention of the National Association of Credit Men. The dry goods men, like the woolen manufacturers, failed to arrive at any direct solution of the difficulty. Yet it is easy to see the way, and the only way, in which a remedy for these two evils can be had. For it is clear that reform is to be brought about only by co-operation among the members of the wholesale trade. At present a wholesaler knows that if he refuses to sell a concern, no matter how grossly it has imposed upon him by cancelling orders and returning goods, other houses will gladly sell it. Hence, rather than see the business go elsewhere, he accepts the cancellation or return and again seeks to sell the customer, in spite of the previous transactions having proved unprofitable. If the wholesalers would stand together and make and carry out an agreement not to sell merchants who are careless of their own responsibilities and of the rights of other people, unjustifiable cancellations and returns would soon begin to diminish.

FELTING IN WOOL.*

The evidence we have gathered serves conclusively to show that the process of felting is not by any means as simple as most writers assume. On the contrary, it depends upon several both intrinsic and extrinsic causes, and instead of resulting merely from the interlocking of the superficial cells of adjacent fibers, it must be regarded as the outcome of a series of modifications in the structure and composition of the fiber. We must therefore dismiss the conclusions of Mr. Youatt upon this question, and look in other directions for the causes. The primary requirements of a good felting wool are: (1) A large number of fusiform cells with extremely thin and elastic walls which respond very readily to the influence of water and permit of its free absorption into every portion of the fiber. (2) The cells must be small so as to impart the necessary flexibility and elastic nature to enable the fibers to readily intermingle and mat together. (3) Its constitution must be more of the nature of gelatine than horn, so that when submitted to the action of hot water, assisted by acids and alkalies, the cell walls are softened, and the fibers readily adhere. It is a well-known fact that under these conditions the felting

capacity is very materially increased, and as seen in the case of hard felt, appears to be almost without a limit. If, however, it is solely dependent upon the interlocking of the individual serrations, it is hard to understand how this can be, since it is impossible for the points of the scales to penetrate beyond the cuticle, which, therefore, limits the extent of felting and shrinkage. In the first instance, two essential features must be borne in mind—viz., the presence and influence of moisture, and the shrinkage which always results from the felting. To ignore these is to miss the crucial part of the problem, because their universal presence in every instance shows that they are intimately connected with the process. Further, so far as my microscopic investigations have proceeded in this direction, it would appear that when the fibers are saturated with hot water the imbrications do not readily lend themselves to interlocking, owing to the tips of outer cells or scales becoming soft and swollen and bending more towards the shaft of the hair. Under these circumstances it is difficult to see how they can penetrate between each other. Further, since extreme felted goods are obtained by using a hot acid solution, which greatly facilitates the operation, this places another obstacle in the way of Mr. Youatt's conclusions, because since both acids and alkalies act upon the wool, especially when they are heated, gradually dissolving the cells, we must admit that the exterior of the fiber will be the first to be injured, thus removing the serrations, which ought, therefore, really to prevent any felting taking place, whereas it becomes more pronounced. To what, then, can the property be assigned? In the first place, I am inclined to regard it more as a chemical than a mechanical phenomenon, owing to the fact that however much we may agitate and entangle perfectly dry wool, it never becomes felted in the true sense of the term. We know that absolutely dry wool fibers have no attraction for each other. Every fiber mutually repels its neighbor, thus being what is termed "electrically negative;" but this disappears as moisture is added, until they begin to attract each other or become "positive." This is well known to most carders and spinners, and so strong is the attractive force that the greatest difficulty is experienced in drafting wool containing an excess of water. The combined action of hot water and acids cause the cell walls to soften, change in form, and adhere more closely together, this becoming more pronounced where pressure is applied as well. Under these circumstances the cells and fibers lose their individuality, and become practically fused together into a more or less homogeneous mass.

SIMPLE WEAVES.

Effects in elementary schemes of weaving suggest the production of patterns on economical lines. Really genuine design in relation to the arts and crafts should be an economic as much as a decorative and useful pro-

*Extracted from an article by M. M. Buckley, Lecturer in Worsted Spinning at Halifax Technical School, published in the Textile Manufacturer.

duct. Not that art, beauty, novelty of texture and excellence of finish should be sacrificed to cheapness. The process of debasing skilled work which is practiced by some manufacturers is strongly to be deprecated. Many an excellent fabric that has only been obtained at considerable cost and by the exercise of ingenuity in designing has been prematurely excluded from a high class market by spurious imitations, says a writer in the *Textile Recorder*. All know something of the history of style degradation in the textile industries. How frequently the sale of what has proved to be an expensive novelty is suddenly interrupted by the inferior works of those whose business it is to exist by imitating in low materials the invention of others! We must distinguish between economies and cheap manufacturing. The former is lawful, the latter a system of adulteration. Fabrics which will scarcely survive the processes of tailoring are disgraceful loom productions. All textiles made for apparel ought to possess sound wearing properties. The more economically these can be acquired the better, but they should always be present in the manufactured article. The Scotch tweed trade is an example of a branch of industry built up and maintained by the practice of simple but ingenious schemes of design and manufacture. All the patterns observed in Scotch fabrics are the results of using elementary weaves. There is little or no elaboration of design resorted to. The yarns, being of a medium thickness, do not require fine spinning, and the woven goods are submitted to a very simple routine of finishing. Here we have the elements of inexpensive and yet sound cloth production. If the fine West of England woolen cloths are considered, cost of yarn making, weaving, and finishing are materially higher than in tweed manufacture, because they are of a more intricate character, requiring greater skill and more time to perfect; but even here the plan of fabric construction is extremely simple, a feature which always effects economical loom results.

It is feasible to analyze the subject of effects in simple weaves, by two methods: First, by considering the range of patterns obtainable in any typical weaves by changing the order of coloring; and second, by taking one group of shades and illustrating the various styles it may be made to give by executing it in different crossings or plans of interlacing warp and weft threads.

Primarily, however, it should be pointed out that in all the elementary builds of cloth it is possible to produce simple stripe and check patterns by combining yarns of one shade, but of distinct materials. For example, effects of this order are made in considerable variety in coating and mantle cloths by using woolen threads for the general bulk of the texture and single threads of mohair for striping and checking purposes. Another scheme of manufacturing adopted when the texture is plain or common twill and probably piece

dye, and yet some small effect is required, consists in using yarns of dissimilar counts or diameters. Thus assuming a fabric to be woven tabby and of one color throughout, then a check of more or less pronounced character is sometimes got by forming the ground-work of comparatively fine yarns, and the checking of single threads of a stouter yarn. Of course the pattern in this case is really due to such yarns being more prominent on the surface of the texture than those making the rest of the cloth, and hence they impart a somewhat rough touch to the cloth, but this is not an objectionable feature in some classes of textiles.

SILK WEAVING IN JAPAN.

Kioto is the Lyons of Japan. It has been for many centuries the centre of the silk-weaving industry and the place where gold-wrought brocades, figured damasks, and painted crapes and velvets have been turned out from time immemorial. Lying in a broad and fertile valley, hemmed in on each side by ranges of wooded mountains, and watered by broad streams, Kioto, the royal city, where generations of Mikados played out their short lives of pomp and pleasure; the gay city where the dancing and the singing girls have always outnumbered those of any other town; the city of flowers, where in gardens of blossoming trees the light-hearted people fling care to the winds; it is still the ideal city of the weaver and the potter, where for centuries, in little workshops and in artisans' homes, trade secrets have been handed down from father to son, and the lamp of generous enthusiasm for art-work has been kept alight. In the long dull streets of Kioto there is nothing to distinguish the modest exterior of a silk-weaving factory from another house, except the strips of coarse black canvas which hang over the doorway and paper windows, which are in this city protected by wooden grills. I will describe, the Japanese correspondent of an English journal says, visits paid to two small but celebrated factories at Kioto, the products of which gained the Grand Prix and gold medals at the Paris Exhibition—namely, those of Kawashimay and Takashimaya. Conducted by a member of the firm of Kawashimay Brothers, we pass first into the winding and skeining room, where, by means of the simplest apparatus of wheels and reels made of light bamboo the silk is being prepared for the weaver. The silk is reeled from the cocoon in another establishment. From three to fifteen (usually eight to thirteen) fibers are spun together. Difference of lustre is obtained by the threads being more or less closely twisted. From the simple reeling-room—close against which is the kitchen where the workpeople's meals are cooked and served—we pass to the weaving-shed, where I am at once struck by the strange apparition of draw-boys sitting at the top of the looms, and pulling towards them with great energy and vivacity of movement the innumerable threads of the harness of the looms. To see silk damask woven nowadays in draw-boy looms is worth almost a visit to Japan. The process appears at first to be intricate and to require unusual sagacity on the part of the workers; but the apparent difficulty which the draw-boy seems to have in selecting and seizing the right threads at the right moment is seen to be no difficulty as soon as the method of working the loom is understood. This is briefly thus:—The weighted harness threads, which hang down vertically and which are attached by eyelets to the horizontal warp ends, are connected together in groups within horizontal loops of fine silk cord, which run at right angles to the warp. These loops are knotted so as to contain varying numbers of harness threads, according to the draft of the design, the draft being worked out in the horizontal loops hanging on the harness, instead of being punched on the cards as in the jacquard loom.

The draw-boy working in concert with the weaver below, pulls towards him the harness threads contained in the loop to be handled next. Doing so obviously raises the warp threads attached, and at this moment the shuttle is thrown. This loop is then pushed down, and the next in order is taken in hand by the boy. When the design has been worked out, and it is wished to repeat it, the whole of the loops which have been pushed downwards are replaced in proper order at the top of the loom. All the most complicated designs are woven in draw-boy looms, and I was assured by Mr. Kawashimay that these looms give better results than the jacquard, both as to economy and the appearance of the fabric when finished. The shuttle is thrown with the hand. Real gold and silver threads are put in with small shuttles, and they are thrown through the warp only the length required by the design. The gold in most Japanese damask is, however, made of gold paper, and in such a case it is treated as a thread and is thrown in the ordinary way. The reeds are made of split bamboo. Those who are interested in silk-weaving, and who visited the Paris Exhibition of 1889 cannot fail to have been struck by a marvellous piece of damask-weaving in the Japanese section, which excited the wonder of the French, the inquiry being frequently heard, "How is it done?" The repeat of the design was about $1\frac{1}{4}$ yards long. It consisted of a groundwork of white chrysanthemums, thrown on a gold satin base. Scattered over this floral ground were seven open fans; on each fan was represented a separate design; in one cocks and hens strutted and displayed the varied hues of their feathers; in another the red maple tree spread its branches for birds to settle in; in a third storks were seen flying across a sunset sky; in a fourth ducks with iridescent plumage were disporting themselves on the water; in a fifth butterflies flitted across a golden background, and so forth. The complication of the design was extraordinary; the number of tints and colors introduced was enough to drive to distraction the most accomplished weaver and draughtsman, while the drawing of every detail was correct and full of life. In the repeat the design was given again in a new range of colors and tints. This wonderful piece of damask-weaving was quite justly awarded the Grand Prix. I was therefore more than delighted when I recognized it again in one of the looms in Mr. Kawashimay's factory, and he was equally pleased that I had borne away such a correct recollection of his masterpiece at the Paris Exhibition. It was being worked in a draw-boy loom, the harness and silken drafts of which were not the least remarkable part of the whole. It takes five months to weave ten yards of this gorgeous damask, and its price is \$75 (£12 10s.) a yard. A design of peonies, chrysanthemums, and roses was in another loom, the drawing and tinting of which were excellent. This piece was intended for the decoration of a pillar, and, 12 inches wide, cost 30s. a yard. The jacquard was introduced into Japan from France eighteen years ago, but it is still used. Most of the silk weaving is given out to be done in weavers' own rooms; only the most difficult and costly work is done under superintendence in weaving sheds. Of this kind is Suzuri weaving. Now and again specimens of this bizarre Japanese weaving find their way to England. The design—generally of figures—is laid in in plain colors, and every color and tint is separated from the rest by slits or gaps in the material, effecting what may be called a kind of a jour weaving. The finest pieces of Suzuri weaving are rarely seen in Europe, as these, like many other purely Japanese products, are made to suit Japanese tastes, and are kept at home. They are used chiefly for wall hangings. The design generally represents royal processions or pageants, court receptions, etc. In order to weave these tapestries the warp is passed over a long beam, which is sometimes 40 feet long; the workers sit close together on high stools leaning over the beam. The design to be worked is drawn pictorially and placed under the warp, and can be seen by the workers through the ends; it is wrought in the tapestry by means of a great number of tiny

shuttles, about the size of tatting shuttles, which hold the various colored silks used. They are passed to and fro through the warp threads only as far as is required to reproduce the design; the slits or gaps in the cloth, found always in Suzuri tapestries at the limit of a tint or color, are made by the return of the shuttle at this limit. At Kawashimay's factory, twelve girls and men were at work at a long piece of Suzuri tapestry representing a procession, in which a great number of horses and men figured. It will take two years to complete this elaborate piece of work, and it will cost from £1,000 to £1,500 to make.

And at what cost of wages, it will be asked, are these wonderful damasks and brocades produced? An air of gaiety and apparent good feeling between employer and men seemed to pervade the whole establishment, and it will, therefore, I dare say, much surprise Manchester readers to learn at what a low sum contentment and highly-skilled work can be purchased in Japan. A good weaver can earn £2 a month; the usual wages are 40 sen (1s. 4d.) a day. The draw-boys are apprentices, and they work for their board and clothes. The factory hours are from 7 to 12 a. m., and from 1 to 7.30 p. m., that is, $11\frac{1}{2}$ hours a day, or 80 hours a week, including Sundays. Two holidays are given a month. Endeavor and excellence in workmanship are stimulated in Mr. Kawashimay's factory by extra pay being given unasked for good work. The master constitutes himself the guide, pastor and teacher of his "hands," and twice a week they are gathered into the great empty room adjoining the weaving shed to listen to addresses on moral discipline and the unrighteousness of making unjust demands, and to this is attributed the fact that strikes are unknown.

IMPROVEMENTS IN WEAVING PILE FABRICS.

A recent English invention described in *Textile Industries* has for its object the improvement of pile woven fabrics. By this invention the floating warp is dispensed with, and the ground warps and the weft threads are arranged so as to hold the pile securely, so that it can be cut cleanly, without being dragged out by the knife. The pile and warp thread are tied in as follows:

The two picks of weft, which are thrown simultaneously, immediately after the crossing of the warp threads in the top and bottom pieces, have not the pile threads passed around them, but the pile which had last been bound in the top piece is brought to the bottom of the top piece shed, and the pile which has last been bound in the bottom piece is brought to the top of the bottom piece shed, so that the top shuttle passes over and the bottom shuttle passes under both the pile threads. The next two picks of weft bind alternate threads of pile into the top and bottom pieces, one pile thread being bound around the top piece weft thread and the other or alternate pile thread being bound around the bottom piece weft thread, the warp threads remaining in the same position as before. The warp threads of both the top and bottom pieces are now crossed, and a pair of picks is thrown, around which the pile threads are not passed. The fourth pair of picks is now thrown, the warps remaining in the same position as for the preceding pair of picks, and the pile threads are passed around them, that pile thread which was last tied into the top piece being now tied into the bottom piece, and vice versa. This completes the cycle of picks, and the first pair is again thrown, and so on. The pile threads, where they are bound into each ground, are held by a single pick of weft, and bound, either by a single ground warp above and below the weft, or bound between two ground warps above and two below the weft.

In order to carry into effect this and the preceding weave described, the pile threads are raised and depressed by tappets, which impart to the pile threads three distinct lifts or

positions, one of those pile threads which are at the top of the top piece shed, both shuttles passing under; one for the threads which are between the two sheds, the top shuttle passing over and the bottom shuttle passing under; and one for the bottom position, both shuttles passing over.

In a modification, the pile is passed around two picks of weft, and is held, where it emerges from the ground, between two picks of weft, which are thrown in the same warp shed. The first two picks of weft, which are thrown simultaneously immediately after the crossing of the warp threads, tie in one of the pile threads to the top piece, and tie in the alternate pile thread in the adjacent split to the bottom piece. The second pair of picks thrown in the same ground warp sheds as the preceding pair, tie in the opposite pile threads, in the top and bottom pieces, to those last tied in; that is, the pile threads are crossed over, and that which was tied into the top piece is now passed around the pick of weft in the bottom piece, and vice versa. The ground warps in both top and bottom pieces are crossed before throwing the third pair of picks, and the same pile threads which were passed around the second pair of picks also passes around the third pair. The fourth pair of picks, which are thrown in the same ground warp sheds as the preceding pair, tie in opposite pile threads, in the top and bottom pieces, to those last tied in, that is, the pile threads are crossed over, and the same pile threads, which were tied in to the top and bottom pieces by the first pair of picks, are again tied in by the fourth pair.

This completes the cycle of picks, and the first pair now follows and so on. It will be seen that the pile threads are passed around two picks of weft in both pieces, one pile thread being passed around the second and third picks of the top piece, while the opposite or alternate pile thread is passed around the second and third picks of the bottom piece. If desired, the pile threads may be all tied in over the same picks of weft, the pile threads in each split not being woven alternately, but both passed around, say, the second and third pick of the top piece and then around the fourth and first picks of the bottom piece. In these cases, the pile, where it emerges from the ground, is locked between the first and second picks, which are both thrown in the same warp sheds, and, as no warp threads cross between them, they are packed up close against each other, and so hold the pile fast, the other tuft of the pile, where it emerges from the ground, is held between the third and fourth picks, in the same way. There are, in each piece, two warp threads by preference to every pile thread, that is, each split or dent consists of one pile thread and two warp threads for the top piece, and two warp threads for the bottom piece, these warp threads being tied in the same in each split. By these improved methods of weaving, the cost of production is reduced, by throwing two shuttles simultaneously, and the pile is economized by tying in over one or two picks only; at the same time, the pile is so firmly held that it can be cut cleanly, and a fine and even piece is produced.

PRINTING SILK FABRICS.

The China silks, which, in the past, have been so popular, were made with a printed warp, and at one time Lyons enjoyed practically a monopoly of their manufacture. Zurich and Crefeld, however, are now entering largely into the industry. The Leipziger Farber Zeitung describes the process used as follows: "After the usual preliminary treatment, the warp is stretched tightly on a table about twenty yards long and covered with a cloth. It is then printed by means of blocks, for which the colors are supplied from receptacles which slide in grooves along the entire length of the table. When the whole of the piece has been printed, it is subjected to the action of superheated steam for about three quarters

of an hour. This fixes the colors. The warp is then packed in a sack and worked backwards and forwards in water by two men, in order to wash out the thickening used in the printing colors. The sack and its contents are then wrung centrifugally; the warp is then taken out of the sack and hung up to dry. It is then brushed in order to close up the threads. The discharge printing of figured silk with a dark dyed background, is of special interest. It has the advantage, as compared with the application of the background, by means of printing, that the pattern is clearer and sharper, while the background itself is of a better color, and, furthermore, that it saves time and therefore money. The background is dyed with such coal tar colors as can be discharged with zinc powder or tin salt, and dyes are mixed with the discharge which are not affected thereby. In this manner green, red, yellow and other parti-colored effects can be got on a dark ground and afterwards steamed. Another and somewhat uncertain method is employed for silk pongees and foulards, which are woven from raw silk. On these light materials points and small figures are printed by the aid of a fatty and resinous body (mastic). The printed places are powdered over with fine pipe clay to prevent sticking, and the fabric is then hung up to dry. They are then dyed with the desired background, the mastic acting as a reserve and preventing the printed parts from taking the dye. When the dyeing is finished the mastic is dissolved away with benzole, leaving places having the original color of the silk. As a rule the background is dyed darker than the printed places, which are dyed of the desired color before the application of the mastic. Both hand and machine printing are resorted to, but while with the former as many as sixteen different colors can be obtained, only two are possible when employing the latter."

THE DYEING OF CHROME LEATHER.

Chrome leather seems to have gained more favor in America than on this side of the Atlantic. This is curious, as 36 hours will tan leather as completely by the chrome process as nine months will in the ordinary way. Besides, chrome leather is more durable than any but the very highest qualities of ordinarily prepared leather, is soft and smooth to handling, and will do one thing that no other kind of leather will do, viz., stand heat. Ordinary leather begins to suffer at 40 deg. C., and higher temperatures ruin it altogether, while chrome leather will stand prolonged boiling in water without undergoing any injury. It might be imagined that this latter property facilitates the dyeing of chrome leather, but that is not so. Chrome leather cannot be dyed well and uniformly without being specially prepared beforehand. Many such processes have been devised, most of which depend upon a further tanning of the chrome leather which is then dyed in the same way as ordinary. Such is the process patented by Avellis and Huster, of Berlin. This consists of freeing the chrome leather from acid by means of lime, rinsing well, and then treating it in a tanning bath. After this the leather can be dyed at once, but clearer shades are got if it is subjected to a further preparation in a tartar emetic bath. A complicated process is described in No. 370 Kampfmeyer's Gerber Zeitung. This directs successive treatment of the chrome leather with alumina mordant, tin-salt, bichromate, and iron, all in presence of acids. The leather so prepared is said to be specially suitable for being dyed with alizarines for which it does not need a higher temperature than 60 deg. C.

The following sketch of a simple method, which, however, is not yet fully worked out, will be of interest to our readers. It is based upon the fact that chrome leather first soaked with

*(From the Berlin Farber Zeitung.)

soda salts, and then treated with a chrome mordant shows a uniform affinity for acid dyes. Strong baths darken the natural color of the leather, but it can be lightened again by the addition of a little acid to the dyebath, so that mode shades can be got at pleasure. Without the addition of acid, the dyes take equally well and uniformly, but are darker and duller in shade. At the same time there is a saving in dye. The advantage of this method of preparing the leather consists in the possibility of employing dilute solutions for preparation which allow the leather to retain its original color, and make the production of clear shades possible.

The acid dyes exhaust fully on the chrome leather prepared as mentioned, whether free acid is added to the bath or not. In order to get a light yellowish brown on chrome leather prepared with strong solutions and on a dark ground, it is only necessary to use a pure yellow such as Azo Acid Yellow. Curcumein extra gives a somewhat redder shade in combination with the natural color of the leather. Reddish brown of different shades is obtained with Ponceau 4GB, Ponceau 3RB Fast Brown G. A full green, the coming color, is given by Guinea Green B which can be changed to olive by the addition of yellow or brown. Fast Blue 6B for wool answers well for navy blue, and Wool Black 4B furnishes a black equal to logwood black. If the leather, previous to the employment of the above dyes, has been prepared with dilute instead of strong solutions, the colors got will be much clearer and finer. All these dyeing processes can be carried out at temperatures not exceeding 50 deg. C. The skins should be entered in pairs, flesh-sides together. Singly they may be dyed by brushing on the dye. The drained skins are coated with linseed oil, and when that has been soaked in they are ironed on the grain side. They are then greased, and are ready for use, being smooth, with a velvet-like feel, and being almost untearable even when very thin.

CHARACTERISTICS OF ORIENTAL RUGS.

There is probably no branch of commerce in which experts are so rare as they are in the Oriental rug trade. The retail carpet dealer in this country may be well informed as regards all domestic or European goods handled by him, but so far as the rugs of the Orient are concerned he can claim little or no knowledge beyond the facts that certain sizes and certain classes of patterns are more salable than others. In the old days the differences between the rugs of the various weaving districts of the East were clearly marked, and a glance at the material, design or colorings of a rug would generally be sufficient to detect at once the country, and in most instances the very district or province, from which it had come. But at the present time such details as texture or pattern are of little use in tracing the origin of a rug of modern manufacture, because in most of the rug weaving districts of the Orient the goods are manufactured for the Western markets under the order and often under the supervision of a European buyer, who allows no native ideas to interfere with his own conception of a good and salable pattern. Such rugs generally possess all the desirable features of an Oriental make, without the defects often found in goods made by native weavers to suit themselves.

Of course these remarks do not apply to rugs which are really antique, or to some modern goods manufactured in districts in which the weavers are still exempt from the influence of western ideas, as for instance in the Caucasus or among the nomad tribes, says The Carpet and Upholstery Trade Review. Such people continue to make their rugs as their ancestors did back to time immemorial, and the rug buyers accept the goods as they come, because they are generally well worth the price, being, indeed, much cheaper than they would be if made to order. In the Orient these rugs represent the same kind of labor which produces the crazy quilt of the American farm-

house, made in the leisure hours of the farmer's wife or daughters. The crazy quilt is hideous, and it is but fair to admit that some Oriental rugs are not beautiful to the eye until time, wear and dirt have toned them down. But while it has been broadly intimated that it is rarely safe to be very positive as to the exact birthplace of an Oriental rug once landed in this country, it is still true that each rug-making country in the Orient has its particular type of rug, the typical Turkish product, for example, being different from the Persian in both weave and pattern.

The Turkish rug is generally woven more coarsely than the Persian; the designs are usually somewhat larger, and consist of geometrical figures and such as are seen on mosque or prayer rugs. But there are also high grade Turkish rugs and carpets which are woven very finely. In Persian goods the patterns comprise birds, animals, flowers and fruits, as well as geometrical figures. Under the designation of Persians are classed such rugs as the Ferehan, Shiraz, Mossul, Cashmere, Savelan and others. The Ferehan goods are made in both rug and carpet sizes, in small chintz designs with dark blue grounds and reddish borders. They rank among the least expensive in the market, and are well suited for dining-rooms or libraries. One noted hotel in New York city has Ferehan carpets in fifty of its rooms. Shiraz rugs are generally antiques. They come in small sizes only, are of closer weave than the Ferehan and more varied in colorings. Savelans resemble Ferehans, but are much finer, and are generally woven in large, bold designs in a wide variety of colorings. But as most of the weavers of Savelans are under the control of an English firm, any designs or colorings required can be supplied. Soumacs, or Cashmeres, are often classed with the makes of the Caucasus, and a Cashmere rug is also made in India. The Cashmere is woven without a woof and in large medallion designs. The ground is generally dark red, and there are usually three medallions in each rug or carpet. The antiques are an admirable specimen of soft rich colorings, but the modern goods are sometimes crude in this respect.

A characteristic feature of many Soumacs is a figure resembling an obelisk. Kurdistan rugs are somewhat subdued in colorings, closely woven, with a short velvety pile, and are high priced. Khorassans are fine in texture, and the designs are not so much conventionalized as is the case with most Oriental ornamentation. Flowers are much used in Khorassan rug and carpet patterns. Bogharas or Khivas are made of black goat's hair, woven very closely, and rank among the finest rugs manufactured. They come generally in two styles of design, one known as the round and the other as the temple. The ground is usually red in various tints. Persian carpets are oblong, coming in any other shape only when made to order. They are woven in almost every province in Persia, but the majority of those which are intended for floor coverings are made in the province of Irak, and chiefly in the city of Sultanabad and the districts of Sarraزند, Garrouste and Malahir. In Persia the earth floor is first covered with a matting made of split reeds, and over this rugs are laid.

In Turcoman rugs the prevailing color is red, and the designs do not vary much; but in other Persian goods there is an almost endless variety of design. Turcomans are classed among Persians because the district in which they are made was formerly subject to Persia.

A large proportion of Persian rugs, and especially the finer grades, should not be regarded as floor coverings, for they were intended to serve as draperies or portieres or to cover divans and tables. Ghilim rugs made in Kurdistan and Turkestan are peculiar in the texture, which suggests knitted rather than woven work. Being light, fine and flexible, with patterns on both sides, they are well adapted for portieres, sofas, etc. The Ghilims of Lauristan and Zarend are preferable for carpets, and those of Kirmanshah perhaps excel all others in the originality

and beauty of the patterns. In many Persian and Indian patterns a characteristic feature is star-like or flower-like ornaments, so placed as to form squares. By varying the colors, or simply the tints and hues, a remarkable and agreeable diversity of effect is obtained from the same design. Coiling tendril work with indented leaves and palmetto-like blossoms is a characteristic of Persian rugs or carpets of the sixteenth and seventeenth centuries. In carpets this work is seen alone or in combination with animal figures or birds. From the thirteenth to the eighteenth century the Chinese exercised a strong influence on Persian art, and these animal figures, dragons, birds of paradise, etc., are all of Chinese origin.

THE LATE GEORGE YOUNG.

George Young, lately of Montreal, died at his residence, 35 Fernhead Road, London, England, July 11th. The late Mr. Young was well known as one of Montreal's most public-spirited and philanthropic citizens, who gave himself and his means to relieve the poor and the needy, counting himself the servant of all for the sake of the Master, whom he served so faithfully and so well. He was born in Bury, Lancashire, and came to Canada at the time of the great ship fever, in 1847. He was detained on the Grosse Isle in quarantine for six months, during which he suffered from the fever himself.

Mr. Young's relatives were wealthy cotton manufacturers, and he represented his uncle's firm for many years. Then he formed a partnership under the firm name of Young & Jefferies, with premises on Notre Dame street. When the firm was dissolved he entered the employ of Thompson, Claxton & Co., which firm was afterwards merged into that of T. J. Claxton & Co., when he became an active partner. Mr. Young afterwards became a partner in the wholesale department of S. Carsley & Co. In addition to these business interests he was for twenty-two years a member of the British American Dyeing Co. Mr. Young's charities were very numerous and his death is deplored by a wide circle of friends in all walks of life, who have felt his helping hands.

LONDON WOOL SALES.

The fourth series of the colonial wool sales opened June 28th with a full attendance of buyers from all sections except America, who were few in number. The bidding was spirited, with fine cross-breeds selling firmly at the rates of the last series overruling somewhat in sellers' favor. Owing to the scarcity of merinos there was increased anxiety among operators to secure offerings at mostly an advance of 5 per cent. for specially scoured, which were keenly competed for, Yorkshire chief operators. The French buyers secured fair quantities and the German representatives bought a few to meet requirements. Cape of Good Hope scoured fleece showed an advance of $\frac{1}{2}$ d. and greasy a farthing higher. The number of bales offered on the first day was 11,942. The attendance throughout the series to date has been large, and competition keen. On July 15 13,076 bales were offered. A fair quantity of medium good scoured and fine greasy merinos sold quickly at high prices. Superfine Geelong greasy was in better demand, and sold at improved prices. The general tone of the sales was firm. Following are the sales in detail for the day; New South Wales, 1,900 bales; scoured, 8d. to 1s. $8\frac{1}{2}$ d.; greasy at $5\frac{1}{2}$ d. to 10d. Queensland, 900 bales; scoured, 10d. to 1s. 5d.; greasy, 7d. to $8\frac{1}{2}$ d. Victoria, 2,900 bales; scoured, $7\frac{1}{2}$ d. to 1s. 6d.; greasy, $6\frac{1}{2}$ d. to $11\frac{1}{2}$ d. South Australia, 1,000 bales; scoured, 1s. to 1s. 4d.; greasy, $4\frac{3}{4}$ d. to $7\frac{3}{4}$ d. West Australia, 100 bales, greasy at $5\frac{1}{4}$ d. Tasmania, 800 bales; greasy, at 6d. to 1s. 1d. New Zealand, 5,400 bales; scoured, 6d. to 1s. 6d.; greasy, $5\frac{1}{2}$ d. to $10\frac{1}{2}$ d. The series is scheduled to close July 19th.

WHERE ANILINE DYES ARE MADE.

The demand for coal tar colors has increased so rapidly of late years as to necessitate the enlargement of all the leading color manufactories of the world. England was the first aniline producing country; but Germany now takes the lead, although the larger amount of raw material is still shipped from England. Cheaper labor and chemical science appear to be the reason for this change.

Most notable among the largest concerns of Germany are the works of the Farbenfabriken vorm. Friedr. Bayer & Co., Elberfeld, the present works, have been added to from year to year till they are now of enormous size, occupying over a mile in length of the west end of the town. These works at Elberfeld were originally sufficient to meet all the firm's demands;



but increased trade necessitated the building of several large factories at the town of Barmen, some three miles down the valley of the Wupper, for the manufacture of the methylene colors. Other important branches were then opened throughout Europe, the most recent of which are at Lever Kusen on the Rhine, near Cologne, covering over 500 acres. This new works is devoted chiefly, at the present time, to the manufacture of alizarine products, diamond black, acids and pharmaceutical products. It is the intention of the directors to some day make Leverkusen their head office. An extensive railway has been built by the company connecting with the main line to Cologne and Elberfeld, which is a great convenience to the workmen. The new works at Leverkusen are fitted up with splendid lockers, baths and all conveniences for the workmen. A stroll through the works at Elberfeld will impress the visitors with their enormous extent. A railway running between the

numerous buildings is kept in constant use, conveying raw material in tank cars, to the various departments, and kegs of manufactured goods to the "Muster lager," to be numbered and labelled, ready for shipment to all parts of the world. At a central point in the works is stationed the fire department, consisting of an efficient staff of trained men and several reels, for in one branch of the works where the highly combustible ether compounds are manufactured, fires are of frequent occurrence, and valuable property is frequently saved by the timely assistance of the "Farbens Feuer Verein." Near here is to be found the works' restaurant, for the convenience of the employees, of which there are some three thousand, and here the working man can obtain suitable refreshment for a very small sum, the proceeds of which go towards maintaining a well equipped hospital and staff. A valuable scientific library is situated on an upper floor of one of the main buildings, which is at the disposal of the chemists and doctors who represent the heads of departments.

Analytical chemistry forms an important feature of the Farben's establishment, where in commodious laboratories, fitted with costly apparatus, over one hundred and twenty skilled chemists are kept constantly at research-work, investigating the intricacies of organic chemistry. In the pharmaceutical branch of the concern are to be seen the results of their laboratory work, where products such as phenacetine bayer, sulponal bayer, aristol, trional, somatose, etc., discovered and patented by the Farbenfabriken are manufactured in large quantities, and have now become necessities in the drug markets of the world. Returning through the spacious offices we see hundreds of clerks, transacting the business of this giant establishment, where up to the present, some eleven hundred colors have been discovered, belonging to the alizarine, azo, diazo, sulphon and other groups, and we easily understand that with such facilities and improved methods, and so competent a staff, this concern promises to occupy the position of the leading color concern of Europe, and now employ over 5,000 workmen and have agencies in all civilized parts of the globe.

The Diamond Dyewood & Chemical Co., Toronto, is sole agent for Canada of this vast business.

FELTS FOR WOOD PULP MILLS.

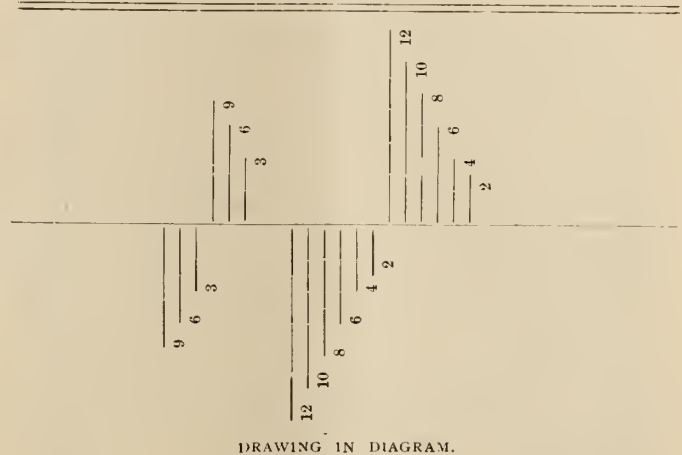
Following are directions for making felts that are used in wood pulp mills as given in a recent issue of The American Wool and Cotton Reporter:

First, secure a medium quantity of English wool, or some coarse grade of wool. It should be a wool that has good felting qualities. Have it properly cleansed and dried. See that the wool is properly prepared, as this is very essential. For a 72-inch felt (72 inches wide), 1,680 threads of warp; weight, 500 grains, draw in four harnesses, two threads in one eye or through two eyes, on one harness shed, reed to be six dents to the inch, two threads in dent, 140 inches in reed, warp not to be too hard twist. Have the warp twisted so that it will stretch and not break off like a pipe stem. Have the warp well steamed, so that it will not kink. The weave is to be plain. The filling should weigh 750 grains, 10½ picks. Filling can be made a little heavier or lighter; should the felt come a little heavy, make the filling a few grains lighter, and vice versa. A felt made in this way and fullled in a push mill, should be woven one foot longer from the loom than when finished. If fullled in a rotary, it can be made to take in more lengths. This part of the fulling is governed by the fulling qualities of the wool. See that the loom works with a positive take-up, and be particular with the friction, so that the cloth will be uniform.

Get the working of the loom all right. Weave a few inches, and then turn the warp forward, so as to leave the ends of the warp at least one foot long for closing. Then when the felt is woven the proper length, turn the warp forward again, so that

there are ends on both ends of the felt. See that the warp and filling is very uniform without any knots. Judgment must be used in regard to the twist, both warp and filling.

This part of making felt has to be done by practical knowledge, as some wools will take the twist quicker than others. After the felt is woven, have it well burled. All knots should be taken out, and everything made right. See that the felt is properly put on to a closing board. Bring the two ends of the felt together and fasten properly. Now take a large needle, and join the list or edge of the felt, running the thread in the same as you would the heel of a stocking (closing). Take the first threads, one from each end of the felt. Tic with a weaver's knot, or some other good knot that will draw through easily. Then draw after this manner:



Draw the first six threads up, and then the next six down; then draw three up and then three down, drawing the threads the same distance or about the same as shown in the diagram. When this part of the work is completed, stretch the felt by taking hold of the upper and lower sides. Then take a whisk broom and smooth the threads out for trimming off. Leave the ends long enough to hook under, as it is called. When the threads have been trimmed, brush again with the broom, so as to take the twist out of the ends of the threads. Then with a hook made for the purpose, hook the thread under. This part of the work must be done so that it does not cockle or wrinkle. Now the felt is ready to be fullled. Spread the felt out smooth, and wet with a common sprinkler with some alkali, just strong enough to start the oil that has been put on in carding. Be sure to wet the felt uniformly. Then give it short runs at first, so that no part of it may knit together, and when partly fullled, it should be put on to a frame made for the purpose, called an overhauling frame, and stretched and fullled to its proper size, leaving it in width three inches over; that is a 72-inch should be left 75 inches. A felt 25x72 ought to weigh from loom 25½ pounds. A felt made in this way is for fast running machine. We will state here that the drawing in of the threads need not be so systematic as shown on diagram, as it would do no particular harm if they vary somewhat, only have them drawn from two to ten or twelve inches.

BELT DRIVING FOR ELECTRIC PLANTS.

Now that electricity is coming to the front so rapidly in textile manufacturing, great interest will be taken in the following statements taken from a pamphlet issued by the J. C. McLaren Belting Co., at the time of the convention of the Canadian Electrical Association in Montreal: It is very gratifying, it states, for us to be able to say that we have handled the largest individual order for belting an electric plant that has so far been placed in Canada. Amongst other points of interest

in Montreal is the generating station of the Montreal Street Railway system, where there is belting transmitting the 7,000 horse-power.

The J. C. McLaren Belting Co's contract for this work covered the maintenance of these belts for two years from their starting up and the total expense to the firm in this connection did not amount to $1\frac{1}{2}$ per cent. of the total value of the purchase. These belts are all made from genuine English oak-tanned stock, a tannage that has properties especially adapted for the exacting work peculiar to electric plant. The total number of hides employed was 1,630; total weight of leather, 15,000 pounds.

MIXTURES.

In order to avoid speckled mixtures, lamb's wool has to be largely employed in carded woolens, especially for the bright colors, for which its short fibers lend themselves to greater distribution. In some mixtures, such as clerical greys or dark Oxford mixtures, even lamb's wool is then too long for a satisfactory result, when resort has to be had to fine and short flannel flocks, says a writer in *The Textile Manufacturer*. Five per cent. of these will distribute themselves much more minutely than the same quantity of lamb's wool, and produce a clerical grey superior to any other material for neatness and tone. The same remark applies to the lighter shade of clerical grey named Cambridge mixture, which is made with 10 per cent. of superfine white flocks and 90 per cent. black wool. These clerical greys are those quiet unassuming shades usually worn by the clergy, and are formed of pure black and white, which gives an ashen grey, deficient in brilliancy and tone.

The commercial world and ordinary people prefer brighter and more lively greys, which are obtained by employing a blue black in place of dead black, and a white previously tinted a faint blue. Indigo should be the color used for tinting, as it is one of the most permanent blues, and fades least under light and exposure. The same remark applies more strongly still to the lighter shades of grey. Assuming that aniline or any other fugitive blue had been employed, a few days in the sun or a visit to the seaside would soon expose the mistake, and the wearer's coat become as cloudy as an English sky. Indigo, being the most expensive blue, is often discarded in favor of cheaper dyes, and the manufacturer's reputation sacrificed to his greed. In these cases, the half-worn garments are sometimes returned to him, with a claim for damages.

Ireland has been found to be one of the most trying climates to colors, although it is not troubled with a tropical sun. The cause lies in the strong saline atmosphere from the Atlantic, which is powerful enough to fade any but the fastest dyes. Common blacks and spurious blues fade like magic, and more delicate colors have a short and sorry-looking existence. Indigo blues and woaded blacks of genuine dyes, and capable of standing the Government tests and the service of Her Majesty's navy, are essential to the Irish climate, and the best firms insist upon those guarantees. Whether in mixtures or in solid colors, the best dyes are the cheapest; the best firms never risk their reputation with the inferior ones, and in consequence are seldom short of trade.

Either on the principle of the survival of the fittest, or from natural selection, different branches of the trade in manufactured wools have located themselves in different districts. Why they should have done so does not appear at the first glance, but something favorable to their development has evidently exerted its influence. Whether it be climate, water, the disposition of the people, or the price of labor, the distribution has occurred, and each district is now noted as the home of some special branch of the woolen industry. With this distribution, different systems and methods of treating the wool and ma-

terial in process have sprung up—each one being the outcome of experience and practice—as the most fitting and successful method of producing the respective goods. This shows that in practice the rigid lines of theory have had to give way, and that one process will not suit all branches of the woolen trade.

Perhaps it would be difficult to find another class of manufactures which requires so much elasticity, and lends itself so little to theory as this trade. Hard and fast lines in manipulation do not fit a staple article which never shows two crops alike, nor exhibits fibers of equal length. The mixed lengths of fibers, and the mixed blends containing staples of varying length, from $\frac{1}{4}$ to 3 inches (two blends seldom being exactly alike), require accommodating in practice by a system of give and take, which no theory has yet been made to fit.

This accommodating or humoring of mixed blends in the carding process can only be learnt in actual practice. It has often been called "rule of thumb," a statement very unfair to expert foremen, since the best authorities could never yet reduce the carding of wools to hard and fast lines. Ordinary clean wool will make its own weight in yarn under good workmanship, whilst mixed blends will waste in different degrees, according to their quality, the lowest class often wasting 25 per cent. between material and yarn. This amount of waste is often unavoidable, but its extent is largely dependent upon the skill and ability of the foreman carder. Some foremen make a minimum of waste, while others seem unable to prevent an excess, a feature which often represents the success or ruin of the manufacturer.

CANADIAN TEXTILE PATENTS.

The following Canadian patents of textile interest have been recently granted:

No. 59,221.—A carpet clamp for securing carpets to the floor by eyelets; Edward A. Coll, Pittsburg, Pa.

No. 59,222.—Improvement on knitting machine; John Barton-Paxton and Ellis Irwin O'Neill, Philadelphia, Pa.

No. 59,411.—Improved carpet sweeper; Bissell Carpet Sweeper Company, Grand Rapids, Mich.

No. 59,418.—Improvement on knitting machine; James Radford Kendrick, Philadelphia, Pa.

No. 59,419.—Improvement on knitting machine; James Radford Kendrick, Philadelphia, Pa.

No. 59,420.—Machine for cleaning carpets; Albert F. Gue, Patrick J. Bonner, Boston, Mass.

No. 59,423.—Threading machine; Morse Keefer Cycle Supply Company, Salisbury, Conn.

No. 59,438.—Settling and recovering apparatus for paper and pulp manufacture; Warren Curtis, Palmer, N. Y.

No. 59,468.—Method of waterproofing fabrics; Amos & Company, Frankfurton, Main, Empire of Germany.

THE WOOL MARKET.

TORONTO.—The wool market is very quiet in the city and prices are almost nominal, as the dealers are not pushing trade as are the local wool buyers and mill owners. We quote Canadian fleece at 16 cents.

MONTREAL.—There is a little more movement in the market and prices are fully maintained, in accordance with advance in prices at recent London wool sales.

—Gold and silver were woven into fabrics by the Indians and Persians long before these metals were known to the Greek and Romans, and although Alexander and his generals employed cloths of gold and silver for clothing and tent furniture, it is probable that these materials were only used to a very limited extent, even at a considerably later period.

Foreign Textile Centres

MANCHESTER.—The home trade recently has been on the whole fairly satisfactory. Certain heavy houses appear to have done well, considering the season, and the advance of about $\frac{1}{8}$ d. a yard in certain standard home-trade cloths has not apparently affected retailers, who were, as a rule, well stocked, thanks to the warnings that, as is often usual in such cases, were given to their customers by the wholesale houses whose lists were advanced. It is understood that certain well-known long cloths were chiefly affected. Merchants themselves are not buying freely, owing to stocktaking. The general cloth position is adversely influenced by the unfavorable position of the Calcutta trade, which has fallen off seriously in volume. As shown by the returns regarding cotton goods shipments from the Mersey reported from time to time by *The Record*, there have been some heavy exports to Calcutta of late; but these, it should be remembered, represent orders placed some time ago. The cargo received by the Conference boats must soon show a very heavy shrinkage indeed. The estimated shipments of plain cotton goods to Calcutta this month are 70,000,000 yards, and to Bombay 28,000,000 yards, the total for both ports being contained in 36,300 packages, or an average of about 2,700 yards per package. Spot cotton has been dull owing to the quantity of stock in Liverpool held by spinners for forward delivery, and to the cautious attitude of manufacturers in Manchester in buying yarns. Both factors tell against spot cotton. In the lace section the demand for millinery descriptions continues to be affected by the unfavorable fashion in hats. Some makes of Vals. sell, and there is a demand for veilings. As far as the French trade is concerned the complaints made on this side as to the intensity of the competition between home manufacturers are also common in France, and Paris wholesale houses find that special goods ordered by them in Calais are copied by other firms and offered at 30 to 40 per cent. less. Muslins and certain classes of ornamented tulles have injured the lace trade. The agitation for more efficient Consular representation in the English lace centers still continues in France, and it is worth observing that the efforts made to stir up Calais feeling on the subject principally proceed from a gentleman who himself admits that he has, in Paris, personally refused the post of French Consular agent in Nottingham. Under the circumstances one feels curious to know why he so persistently advocates the strengthening of French Consular representation in the midlands. The position of the linen trade is rather more satisfactory, and it is hoped that the recent troubles will not be followed by others. Nothing is heard just now concerning the proposed flax spinning amalgamation, which may possibly be checked by the Hooley catastrophe. It is not suggested that Mr. Hooley had anything to do with the scheme, but his rocket-like descent from the heights of the financial firmament may for a time make the investing public shy of large flotations. There have been some heavy stocks of certain counts of tow yarns on the market lately, one firm who failed recently having 100,000 bundles of a single count, a circumstance, one imagines, almost unknown in the trade. Heavier stocks have of course, been known for the range of counts in case of failure, but for a single one the quantity mentioned appears to top the record.

OLDHAM.—The local reeling trade is in a poor condition. Spinners report that yarns produced from East Indian cotton are depressed.

LEEDS.—The cloth market during the latter part of June was dull, which was partly due to the fact that the summer purchases last week turned out to be larger than had been estimated. Merchants' stocks show that the season has so far been equal

to expectations. The production goes on of all kinds of winter fabrics in beavers, reversibles, naps, friezes, meltons (brown and black), unions, pilots, and medium cheviots. The greatest improvement is seen in the demand for best worsteds, and some foreign enquiry exists at hardening prices. Low worsteds and serges for late delivery are difficult to sell. Fair quantities of stout tweeds and cheviots are selling for immediate shipment to Canada.

BRADFORD.—As the result of favorable reports of the coming harvest, both in Europe and America, and the reduced price of breadstuffs, a certain amount of speculative buying was participated in last week, which affected nearly all classes of colonial wool; but as soon as holders began to advance their prices in sympathy, business was checked and operations are now confined to supplying immediate wants. The reports of the production of finer merino wools from Australia are all in the direction of a shorter supply, so that as soon as any real improvement in trade is assured, an upward movement in prices seems inevitable. Crossbred colonial wools will be in good supply at the coming sales, but the fact that there has been some small improvement both as to the quality of business done in these wools, and also in the prices of both wool and tops, gives a certain amount of tone to the trade, and encourages the belief that we have at last come to the end of receding prices, and have passed the worst. There is wonderfully little life in the English wool trade. Farmers are so dissatisfied with the offers they are getting from either the Bradford merchants or the local country dealers, that they are determined to keep their wool as long as possible, and are not bringing it to market a day before they are compelled to. The recent advance in the prices of raw alpaca and mohair, which is equal to perhaps 25 per cent., is fully sustained; but no further progress in an upward direction seems to be imminent. As mohair is at the present time entering so largely into the composition of the most fashionable fancy and plain dress fabrics, the present position of the market in regard to raw material is of distinct interest to all dress goods users. The total importation of raw mohair from both Turkey and the Cape, the sole sources of supply, will this year not exceed at present prices a value of one and a half million pounds sterling, and of this amount, after the waste in preparation and the hair not suitable for the production of dress goods has been deducted, there will not be left more than a third of the whole amount for manufacturing into Bradford fabrics. There is always a steady demand for mohair yarns of a good quality for linings for the American trade, and also for summer coats, which are principally worn in the southern countries of the Continent, and these demands have always kept mohair within some 4d. per lb. of its present price, even at times when plain mohair dress fabrics were not fashionable. If, therefore, this newly-introduced trade in fancy mohair crepons has come to stay, and this is considered practically assured, then this additional demand for mohair will probably keep the average price of the raw material at practically the present level. Another factor of the situation is that some of the shrewdest exporters of dress goods to the United States have already placed very considerable orders for plain alpacas and mohair glaces, in readiness for the next spring trade in that country, so that more than a normal trade may be looked for in plain bright fabrics. Although some considerable business has recently been done in mohair yarns, both on home and export account, there is very little improvement to be noted in the ordinary worsted yarn trade as yet.

KIDDERMINSTER.—The meridian of the year is passed. We take a brief retrospect of the carpet trade for the six months. There has been a growing demand for the best qualities of Wiltons and Brussels. It is one of the gratifying features of the trade; proving, as it does, that many of the buyers have

returned to a healthier condition. The demand for all classes of carpets has been well maintained. Axminster makers have been well employed, and, with their perfect combination, prices have been firmly maintained. The Brussels manufacturers have not been quite so fortunate. The consumption of the home market is greater than ever, and it is mainly here that manufacturers find the demand for goods. With America our trade relations are of the slenderest. It is only when specialties are required that the Yankees turn to England. The hold of our carpet houses upon the Continental markets has weakened. This has arisen not through any want of energy at home, but as a result of increased production abroad. Germany is now our keenest competitor. Not only do her carpet makers supply the needs of the foreigner, but they are now invading our home markets, and their goods are found in many of our London and country warehouses. The Continental tariff with the exception of the northern portions of Europe, is almost prohibitive to our makers. The Scandinavian trade continues fairly healthy and good. With Spain commercial relations have for the time practically ceased. What orders had been placed when the war with America broke out were either absolutely cancelled, or marked "held over" in such a way that they are virtually lost. A good trade is now anticipated with Canada. The tariff concessions, which were explained last week, will it is believed, enable English makers to successfully compete with the Yankees. Canada, however, is not developing in a commercial sense so rapidly as was at one time expected. She seems to be too close to her more pushful and boastful neighbors. Still there ought to be a good opening for our manufacturers, whose representatives are now actively moving among the buyers. Of course we are now entering the quiet season, but as far as can be seen the indications point to a fairly good and healthy trade in the autumn. The unsatisfactory feature of the past season's trade has been the system of short and urgent orders. Retailers have declined to keep stock, have thrown this burden and expense upon the producers, and when the time for cutting up has arrived they have sent down urgent demand for goods, causing great annoyance and unnecessary expense in order to meet these requirements. A little more prescience on the part of the dealers in anticipating their wants would avoid delays and prevent disappointments. It has often happened this season that a firm has been compelled to run overtime for the sake of one or two looms. Rug manufacturers have been busy during the greater part of the half-year, and the demand continues good. There is a growing taste in many quarters for rugs as well as for the small six-quarter squares. On the Continent the demand for this class of goods is rapidly increasing, and those who are catering for this market are doing well. The wool trade during the past six months has been one of quiet demand; the consumption much below the average, and the tendency of prices slightly downward. The exception has been the higher classes of merino wools, owing to the scarcity of supply and to immense losses among Australian flocks. Prices for these wools have advanced on the whole fully to per cent., if not as much as 15 per cent.; but other grades, both of English, Colonial and foreign wools have given way in values to the extent of from 5 to 7½ per cent. At the present time the English clip is being marketed at this reduction. The quality is an average one; but in many districts the fleeces are running rather lighter than usual in weight. There is a growing feeling that prices—which have not been so low since the year 1847—have now reached the bottom, if, indeed, that point has not been left; and there are indications that consumers would like to fill up at these quotations. At the same time there is very little speculation, and purchases up to the present have only been for immediate requirements. If a speculative spirit should be aroused, values would at once increase. The first half of the year has been by no means a good time for spinners. Very few have been re-

quired to run their machinery to its full capacity; in fact, the stopping of machinery and short time have been more or less the rule. A gradually falling market always tends to curtail business; but this has not been the cause of the present inactivity. There has been a total cessation of business operations with America. The frames which hitherto were kept employed to meet the requirements of that market have been brought into use for home consumption and the local competition intensified. Prices, in harmony with the values of raw material, have slightly given way all round; but it may be taken for granted that with the present position of things spinners find it impossible to make any further concessions. Stocks of yarn have generally been very much reduced, for spinners have preferred to stop machinery rather than be burdened with heavy stocks. The outlook just now is more encouraging than for the last two or three months, but it must not be forgotten that the months of August and September are usually very quiet, so that it is difficult to speculate with regard to the future. It is known that the stocks of manufactured goods in the hands of dealers are exceedingly light, and therefore there may, and we hope will, be a fair run of orders in the autumn. This is the season when the demands of the northern countries of Europe are made known, and if the orders are as good as in some previous years the local spindles will be well employed for at least a couple of months on Scandinavian requirements.

NOTTINGHAM.—Lace and curtain yarns have met with a dull enquiry recently. The market has been decidedly unfavorable to sellers; prices are weaker, but there has been no speculative business, and current rates have not been fairly tested. Hosiery yarns move slowly; moderate quantities of merino and fine cashmere yarns are selling, but the tone of the market is less favorable. Bobbin nets, light tulles, and spotted nets are unaltered in value. Business in the fancy lace warehouses is slow, though finishers of curtains, window blinds, and furniture lace are well employed.

LEICESTER.—The yarn market is in a more active and healthy condition, larger contracts are offering, and there is a gradual increase in the consumption, while rates are very firm all round. Stocks are low. The hosiery industry is still very partial, and the repeat orders for the home trade, although more numerous, are of small extent. The export trade shows a steady and healthy expansion. Elastic web specialties are in good demand.

SOUTH OF SCOTLAND.—Dull trade still prevails in the south of Scotland tweed trade. A few makers are busy, notably those engaged in the manufacture of cheviots and the better class goods. It is believed that the Spanish-American war is having an adverse effect on this important industry. There is still a good demand for worsteds, and this kind of cloth seems to be a general favorite. Prospects for next season are encouraging.

KIRKCALDY.—The Kirkcaldy linen trade is inactive, due in large measure to the recent suspensions in Aberdeen and Dundee. An improvement is expected as soon as the wholesale warehouses have finished stocktaking. Considerable activity prevails at the linoleum and floorcloth factories.

BELFAST.—There has not been much alteration in the general condition of this market. There is a steady hopeful tone throughout, with a moderate amount of fresh business. The weather has not been particularly favorable for the Ulster flax crop. There has been considerably more business in yarns, though at the moment the demand has subsided somewhat. Short time has been adopted pretty extensively by individual firms, while in other cases a number of the spindles have been stopped, so that current production is under the normal, and it is evidently the intention of spinners not to go into stock with

the prospect of some one breaking prices. Values are quite firm, and will probably continue so owing to the small stocks of yarns with spinners and merchants. Brown power and hand-loom goods in some quarters show an improving demand. Union goods appear to be more enquired for, and the turnover of the week would probably exceed that of previous one. Thirty-eight-inch power loom cloth for bleaching has sold fairly well, and producers continue well employed. Cambric and linen handkerchiefs are dragging somewhat, the demand showing very little strength from any quarter. Damasks and housekeeping lincens, on the contrary, are going briskly into consumption at late full rates. Ballymenas are selling steadily, but not briskly; stocks are in easy control and prices quite steady. The production is about at its smallest and nothing much in the way of increase looked for until after harvest. The demand from the home markets for bleached and finished linens has undergone no appreciable change. Enquiries perhaps are a trifle more numerous, but it will be the turn of the month before any quotable recovery sets in. General export trade is keeping up fairly well, and shipments to the States are now going on regularly. On the whole there is not very much to complain about, and if the States were only normal and internal troubles in Italy at an end there would be practically nothing.

LYONS.—The Lyons market for silk goods has not materially changed during the week under review and continues in a languishing state. Buyers from Paris, London and America have been here, but their purchases were not large and were mainly in low-priced goods. There is no actual lack of work, but the looms are not near as well employed as they were a year ago. A certain nervousness, created by the fear that the demand may still further decrease, is manifesting itself. Concessions in price are therefore made with a view to securing work in advance, or to keep as many looms employed on orders as possible. This is particularly noticeable on the part of power-loom mills, which are trying to meet the changed conditions by reducing wages. In plain piece-dyed fabrics there is still plentiful work, but not sufficient to keep all the looms running, and of the looms especially mounted for faconnes an increasing number are standing idle. Jacquard looms have been particularly affected, there having been a marked falling off in the demand for all the low-priced grades, such as grege warps with cotton filling. Cheap all-silk damas in either black or glace on black warp, and even figured taffetas on plain or haitienne grounds, have also suffered. In mousseline, too, orders are constantly falling off, although these grades have not entirely ceased to be fashionable. Better grades of satins for special purposes, which generally keep a fair number of looms employed all the year round, have been ordered in small quantities and stocks are accumulating. Taffetas in plain, glace, stripes and checks are still being ordered in considerable quantities, and will continue to furnish work for a number of mills; but the orders are not arriving with the same regularity as previously. The English trade is reported as less satisfactory, not alone with regard to quantities which are sold, but especially with regard to prices, which have greatly suffered from the keener competition. Generally speaking, however, the sentiment remains good, and an active fall season is expected. The hesitancy on the part of the buyers is considered natural, considering the uncertainty of the political situation, but as the fashion continues to favor silk goods in an unusual degree, it is thought that an active demand will develop in the course of the season. The velvet trade shows a little more life. There was a fair demand for plain velvets in schappe pile goods, as well as in all-silk qualities. Striped and checked velvets were sought, especially by American buyers; velours faconnes were ordered in small quantities.

CREFELD.—Trade has been quiet here lately, partly because the period of between seasons has begun and partly on account of the unfavorable weather which interfered with an active development of the retail trade, and which left in the hands of retailers and wholesale houses larger stocks than are desirable. Large orders had been placed for spring in anticipation of an active demand, and a reserve is therefore natural after a season which did not yield all which it seemed to promise. But still the mills are in a favorable position; there is sufficient work for several months to come, and hand-loom weavers for some grades of plain goods are again eagerly sought. Orders for fall are arriving in satisfactory numbers and great hopes are entertained, as fashion continues unmistakably to favor silks. The tendencies of fashion are, however, not clearly defined, and it will take a few more weeks before anything positive can be reported. Enough is known, however, to warrant the statement that the demand for moire effects will continue. Aside from these, stripes and checks are prominent, and a demand for novelties in damas is felt. With regard to styles in these it is observed that flowery effects are neglected and that the preference is given to small geometrical designs. As a consequence better grades are required; the present small figures do not cover so well and a richer ground is of more importance. Low grades are for this reason neglected. Warp prints are being taken up more freely, and are extensively sampled despite reluctance on the part of manufacturers. Experience with these fabrics has not always been satisfactory, but more confidence is shown, and it is thought that for next spring they will play an important role. A striking novelty has been produced in materials for sunshades, consisting of a texture which combines the outer material with the lining. In this case it is not produced like the old double-faced fabrics. The texture representing the lining is loosely connected with the covering silk, and is a plisse taffeta distinctly differing in design from the outer silk. The main weave is either satin de chine or some other kinds of satin, while the lining is plain, faconne or in stripes and checks. A good demand is anticipated for this new creation. Manufacturers of necktie silks are less busy, seemingly from the effect of overproduction during the last season. The prospects for the velvet trade are constantly improving. Fancy velvets are well sought and orders for plain millinery velvets are increasing. There are also indications that for dress trimmings and dry goods purposes a better demand will be experienced during the fall. Prices, however, are not very satisfactory. Manufacturers are discussing the necessity of forming a combination, as overproduction has led to deplorable results. It is pointed out that for the sake of keeping their looms employed numerous mills have accepted orders at prices which must be considered ruinous, and which will result in disaster not only for themselves but which will make it impossible for the entire velvet industry to work at a profit. The unsatisfactory state of the velvet trade during a number of years is put down to this cause. It is recognized that the formation of a combination will be attended with great difficulty, but it is pointed out that other trades have succeeded and that the velvet trade may do likewise.

CHEMNITZ.—Manufacturers are at present very busy making up sample lines. Orders have not been so plentiful during the last few weeks, but most importers want to see new samples for spring, as they anticipate a good season. In plain goods black will be again in the lead. Tans will most likely be in lessened demand, but blue shades have been taken up by a number of buyers. Lisle hose, with fancy drop stitches or Richelieu or Rembrandt ribs, will be desirable property, and as the production in these goods is limited it might be wise not to delay the orders too long. In fancy hose all imaginable styles will be shown, excepting, possibly, vertical stripes.

Other striped goods of all styles, embroidered and printed patterns, are shown in great variety. Some leading buyers have already placed such orders on especially good styles that manufacturers had to withdraw the samples from sale, as the production is sold up until the end of the year. In gloves everything points to a good season in buttons and clasps, and if it lasts long delays in deliveries will again result.

-sizing and slashing.

At the meeting of the New England Cotton Manufacturers' Association, held at Boston, an interesting discussion took place on the above subject. So little is said or written on this important part of the economy of a mill that, although the opinions expressed need not necessarily be endorsed, there are one or two points worth noting.

Edward Atkinson said: I am told that the important point in dealing with the fibers either of cotton or of wool, but especially of wool, is to keep the heat applied down below a point at which the fibers become brittle. I believe that point in wool is about 120 deg. F., but what it is in cotton I do not think any one really knows. There is a point, we all know, at which yarn becomes brittle, but that point is not established. It is, however, a well ascertained fact that the colder you can get the substance which is to be dried the less the requirement of temperature to dry it. The lower the temperature the less injury to the fiber, and the more elastic may the yarn become. I believe those are fundamental principles. Some time ago I suggested that in winter mills on canals should lay up a stock of ice to be used as a cooler of the yarn as it emerges from the size box saturated with boiling size, to the end that before the drying operation should be applied the temperature of the yarn, with its water in it, should be reduced to the lowest possible point. And if you will look back in your old records you will find a record of the capacity of air to take up moisture in ratio to its temperature. Now, a new farce has lately been developed of which we have yet no knowledge—liquid air. Liquid air is produced by compression on condensation. The volume of air is reduced from 700 to 1, or thereabouts. How far that new development or new form of energy may go, none of us can yet imagine, but it brought instantly to my mind a suggestion which I made, and which I now put before you, for whatever it may be worth—pure theory. Compression may be readily applied in any mill to a large volume of air. When that volume of air is suddenly released, it reduces temperature very rapidly. If, therefore, you will compress air, pass your sizing directly from the size box, filled with water and hot size, through a chamber in which you can release compressed air, and thus reduce its temperature to a given point, just above freezing, a matter which will depend wholly upon the power required, a measurable quantity; you may then pass that yarn to your drying apparatus, and it would seem probable that you would immediately dry it with less expenditure of heat and at a much lower temperature and with much greater elasticity than you now get when you apply the drying process to yarn that is already at the boiling point.

Frank M. Messenger said: We undertook to do something with modern improvements in sizing compound, and tried one thing after another until we got so disgusted with the whole business that we almost resolved to set a guard at the door against sizing compound men. When we first started we found but little saving in cost and equally good results; but I do not know how it came about, that saving seemed to fade out until we woke up to the fact that it was costing us a little more than it did to use plain tallow. I suggested the matter to our overseer of weaving, who also has charge of the slashing, and I found that he would be very agreeable to using tallow again,

as we had formerly done, and as we were doing at the lower village on our heavier work, and we have gone back to the old-fashioned idea of using a little tallow with our sizing, using no compound whatever; and we have not found in the very many different kinds we have used the advantage of using compounds over using tallow. Perhaps there is one little advantage that we found with some of the best compounds. I think that the cylinders and coppers are a little cleaner than they are with the old method of using the clear starch with the tallow. But as to the uniformity of our warps in general, the smoothness of our yarn, the weaving qualities and everything, we find that we get as good results with the plain tallow, using a good quality of tallow, as we can get with any compound, and on the whole we like it better. I wanted to ask one question in regard to the weight of section beams. Now that is something we have changed a great deal in later years in most of the mills, and we are using larger section beams than we used to. In one mill where we were weaving plain sheeting, in remodelling the mill we undertook to save in the expense of warping and spooling, etc., and where we used eight beams of four hundred ends on a beam, No. 29 yarn, twenty-seven thousand yards in length, we reduced the ends to 320 and put on thirty-nine thousand yards, and ran ten section beams in the slashers. The result was that we had to increase our warp yarns about a half a number. From twenty-eight and a half we had to run down to twenty-eight yarn, and we had to make our filling a little heavier. That was the only change that was made that we could account for, the change we were obliged to make in the yarns to bring our cloth at the right weight. Now that immediately suggested that it was a very bad thing to do, if we were taking all the stretch out of the yarn. But with the southern mills staring us in the face and the little saving in the labor cost, we held our breath and worked along with it; and we do not perceive any disadvantage in the weave room, on the contrary, we are weaving more of these goods than we ever wove before, not owing to this but attributable to other causes. But we are getting larger production than ever, indicating that it does not seem to do any harm. I should think on fine work it would. It must necessarily be an injury to the yarn, and it would seem that it would be an injury even to yarns as coarse as No. 28 warp, but the facts in the weaving do not bear it out.

Woodbury K. Dana said: One of my customers wanted me to make him 30 yarn with about 900 ends on a beam, and I found when I started the slasher some of the ends would break, there were not enough of them to readily turn the slasher, and we had to work quite slowly in order not to have them break. Now we got over this by putting a shaft parallel with the side shaft, and even with the center of the slasher cylinder, and on the side shaft and this parallel shaft we had a pulley, on each of them we had a pulley, and these two pulleys were connected with a loose belt, but that belt had a band on it that we could readily tighten or loosen, and it was arranged so that by tightening it all of the strain is taken off the yarn, and the cylinders are turned by this belt, or the main cylinder is. On the end of the shaft, I should say, there was a pinion playing into a gear that was passing on the side of the shafting. This mode of turning the cylinder I have used some ten or twelve years, and it has never given us any trouble. Now this helps me in another way, and I will explain that in speaking of the second trouble that I have had with the slasher. A man wanted me to put 700 ends on to a 30-inch beam, and in contracting the yarn from a 50-inch or a 54-inch beam on to a 30-inch beam it was very hard to get the selvedge uniform; and after studying it for some time, in place of running the slasher and trying to contract from a 50-inch beam down on to a 30-inch beam, we put two beams in front of the slasher. The second beam was turned by a shaft running in front of the other one. That second shaft was driven by gears, or by a chain gear, and we ran the two

beams, putting on each of them 700 ends, and then of course they were very nearly as wide as the beams were behind, and we had very little trouble in contracting the selvages. We were enabled to run it faster than we would one beam, and got more than twice as much, for we were running it faster than we did before. I presume I only used the ordinary comb when I filled these two beams, dividing the yarns in the centre of the beams. Of course when we put in new beams we had a good deal of trouble in adjusting the new beams one way and another; they were not both the same width with the comb, and we could not widen or contract the comb to correspond with the width of the beams. So where we had one comb we put two combs, each of them, of course, only occupying half of the space of the slasher. Now with these we were enabled to fill two beams at the same time, and I think that I have saved the worth of one man, or one man did twice as much work as he did before that. Another thing in connection with it is that, if we do not want to get off much work, we can run the slasher slower. I think it is a great help in sizing yarn to run it slowly through your size. It gives the size time to penetrate it. We know that chain warp is a great deal better, that chain warp size is a great deal better than warp that comes from the slasher. I think it is because it has time, being sized in the chain, to have the yarn thoroughly penetrated with the size, and if you want to have this and run your slasher slower, get off more work than you do now, the yarns will weave better on account of having more size in the warp than they do where you run them so quickly through your size.

Roscius C. Newell said: In connection with what has been said perhaps a recent experience may be of interest. I have never been able to see why exhaust steam under a given pressure should not dry just as much yarn as live steam under the same pressure, and to every enquiry that I have made on the subject I have received the answer that there is more moisture in the exhaust steam than in the live steam; but I could not see what that had to do with it and when it became necessary for us to add another slasher to our equipment I made some experiments. I thought perhaps our piping was too small, so I arranged to have it changed, but before the work began I found that the weak point apparently was the slasher cylinder, as has been suggested, so I visited the Lowell machine shop with a view of ascertaining what could be done to enlarge the inlet. On my return home I had the holes reamed out, then made a box and put it at the end of the cylinder, so as to get the benefit of the full size of the cylinder. I found that in previous experiments which I made it required about two and one-half hours longer to do the same work with low pressure steam than it did with high pressure steam, but the result was we only consumed about 2 per cent. more steam with the low pressure than we did with the high pressure, while the time amounted to over 18 per cent., and it convinced me that the trouble was the want of inlet capacity. As soon as we had started the slasher, after the change was made, our slasher tender made complaint that that slasher took the steam away from all the others. That was one point that I wished to call your attention to in this connection. It seems too absurd, on the face of it, yet the size of the inlet of the large cylinders on all the slashers I had seen was just the same as the size of the inlet of the small cylinder. The wet yarn ordinarily strikes the large cylinder first with several times the area and there is a large amount of condensation, and still the inlets of both cylinders have been just the same. In our new slasher which we have just had built we have had it changed, and increased the size of the inlet to suit our requirements.

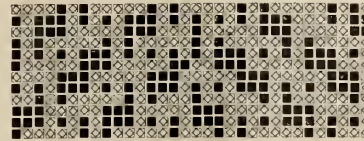
E. A. Heney & Co., Montreal, have put in a new 60-inch carding machine in connection with their carriage rug factory.

Textile Design

Worsted Trousering.—7,650 ends in warp; 120 ends per inch; 15s. reed; 8 in a reed; 56 ends worsted per inch; 28 ends woolen per inch; 84 ends per inch; 64 inches in reed; 56 inches wide when finished. Weight 22 ounces.



DRAFT.



DESIGN.



PEGGING PLAN.

Warp: 29s worsted.

2 slate,		2 black,	
2 twist,		2 slate,	
2 slate,		2 black,	
2 black,		6 slate,	3
6 slate,	4	2 black,	times.
2 black,	times.	2 slate,	
2 slate,		2 black,	
2 twist,		2 slate,	
2 slate,		2 black,	
2 black,		6 slate,	3
6 slate,	3	2 black,	times.
2 black,	times.		
2 slate,		136 ends in pattern.	

Weft: 2 picks black, 2-42s; 1 pick black, 15 skeins woolen.—B. J. of C.

SPINNING IN SHETLAND.

Shetland women of all ages, ranks, and classes spin for profit or for pastime, and there seems to be a fascination about the pursuit incomprehensible to the male understanding, says a writer in the Textile Recorder. Regarded from the outside, it seems a dreary occupation to sit hour after hour feeding the wheel with interminable rollers of wool. But no woman who has once learned to spin ever voluntarily abandons the occupation. Some twenty years ago, when there was a great exodus of Shetlanders to the colonies, the women regretted nothing more than leaving their wool-cards and spinning-wheels. Many of them actually took these possessions with them and put them to use. In other cases the men folk, after they had settled in their new houses, set to work and turned out these implements by their own handicraft to gratify the women.

Spinning-wheels differ in form and size according to the kind of spinning for which they are designed. The present generation of women are not such connoisseurs in spinning-wheels as were their mothers, because their knitting is almost all of one quality—shawls and underwear for sale. Their mothers had to spin waft and yarn to be woven into claith and blankets; sock yarn, jumper yarn, and frock yarn; rug-grounds and rug-tats. These were all of varying thickness, and could not be spun on the same spinning-wheel. Wheels with a large circumference twist the wool best, and are adapted for fine spinning. Smaller wheels make a thicker thread. There are other points which affect the quality of the thread. As the fineness or thickness of the finished thread depends not on the number but on the size of the strands, of which there are seldom more than two in the thread, individual judgment must be exercised as to the particular wheel to be used. Those acquainted with spinning-wheels maintain that they have as much individuality as the women who use them. The same wheels often remain in families for generations, and their qualities get to be thoroughly known.

The use of the spindle has entirely disappeared. Old people remember having seen it used occasionally by old women when all the wheels of the household were already in occupation. A later form of spindle which is very simple, is a short stick nicked at the top, which is stuck into a potato or round piece of peat. The ends of the horse-

hair are tied to the top of the stick, which is then twirled till the hairs are sufficiently twisted. The hairs are then doubled and twirled in the opposite direction. The implement is now called a tammy-toddy or patie-toddy. The huge wheel on the wall is now seldom seen. It was chiefly used when a large quantity of wool had to be spun, as it could spin up a good deal without a change of the pirns which hold the thread as it is being spun, and the thread was thus kept unbroken. For the same reason it was used for spinning very thick thread, which rapidly filled the pirns of the smaller wheels. The wall wheel had to be kept in motion by the hand. The person using it paced backwards and forwards before the wheel, moving backwards to draw out the thread from the wood, and then advancing to run it into the "e'e" of the wheel, at the same time giving the slackening rim a flip with the disengaged hand. It was a graceful occupation, and well calculated to show off a fine figure; but it must have been much more tiring than the foot spinning-wheel.

The whole apparatus now used for spinning are the sweery, the spinning-wheel, and the reel. The sweery is a frame with a movable wire fixed in it, on which are run all the pirns—empty and full—not in use on the wheel. When the pirn on the wheel is full it is taken off the "flee," placed in the sweery, and an empty one taken off and placed on the "flee" again. When this is also full it is put back in the sweery, and the contents of both pirns are then twisted together on a third pirn which has been placed in the "flee," the rim of the wheel being turned in the direction contrary to that by which the strands—which are variously called "phils" or "cords"—are spun. This twisting together of the strands, called "twining," is the most wearisome part of the spinning. When it is finished the yarn is wound off the pirn on to the reel—usually an ell-long stick with a cross at each end. The yarn is now ready to be washed before knitting. The same process is gone through with a fresh lot of wool till enough is spun for the purpose required. A good spinner will spin a cut of fine yarn in about three hours. Thicker yarn takes shorter time. Carding the wool was formerly done by kames, and there are old women who still maintain the superiority of kaming. It separated the long wool of the fleece from the shorter parts, which could then be rejected. But it was a much slower process, and is not likely ever to be revived.

Carding is hard work, and is usually done by calling together eight or ten women of the neighborhood and getting all the carding of the household done at a time. But spinings or "rockings," once common enough in Scotland, have never been known in Shetland. One reason would probably be that there is not room round the fires for more than three or four spinning wheels. But the chief reason is that no two women spin exactly alike, and a web spun by a dozen or so different hands would be full of inequalities. When the wool for a web was carded it was patiently spun by the women of the house, each taking a section, which she finished.

NEW DYESTUFFS.

New Patent Blue B, and New Patent Blue 4 B are two recent additions to the ever growing list of level dyeing wool colors. The shade of the B brand lies between a green and a blue and (as may be seen by pattern card No. 678), closely resembles the well-known color Fast Green extra bluish, but is considerably brighter in shade. The 4 B brand dyes a very clear and pronounced blue. Both dyestuffs are homogeneous products and are equally as fast to light as the fast greens, also fast to alkalis and sufficiently so to acids. Their fastness to washing and milling is satisfactory for goods not heavily milled; when dyed on a chrome mordant their fastness to milling is increased. They also stand stoving well. On account of their level dyeing properties, they are very suitable for dyeing ladies' dress goods, and fine yarns, as well as billiard cloths, etc. Bright navy blue shades are obtainable by mixing New Patent Blue with Azo Fuchsine or Fast Acid Magenta B. These colors can further be used to advantage in dyeing silk, leather, feathers, paper, and for the manufacture of ink. Directions for dyeing on wool: Dye one hour, boiling with the addition of 20 Glauber salt, 2 per cent. sulphuric acid. Samples and pattern cards will be mailed gratis on application to the Dominion Dyewood & Chemical Co., Toronto, sole agents in Canada for the Farbenfabriken, vorm. Friedr. Bayer & Co., Elberfeld, Germany.

Alizarine Sapphirole B.—The Farbenfabriken, of Elberfeld, have just prepared a neat pattern card of this new product in conjunction with Indigo Carmine, and so conveniently arranged for exposure to light by customers who will then be convinced of the high degree of fastness to light of Alizarine Sapphirole B, as compared to Indigo Carmine. The latter has served up to the present as the standard of blue level dyeing colors. When exposing this card to sunlight it is advisable to examine it every few days to determine correctly to what extent the sun has acted upon the dyed patterns. It will be noticed that Indigo Carmine has faded long before any change is found in the Alizarine Sapphirole.

TEXTILE IMPORTS FROM GREAT BRITAIN.

The following are the sterling values of the textile imports into Canada from Great Britain for May and the five months to May, 1897-1898:

	Month of May.		Five months to May.	
	1897.	1898.	1897.	1898.
Wool	£ 190	£ 1,396	£ 8,114	£ 21,112
Cotton piece-goods	20,309	21,668	182,421	212,230
Jute piece-goods.....	6,478	10,025	39,760	54,979
Linen piece-goods	6,173	7,125	49,342	58,805
Silk, lace	252	255	2,645	3,949
" articles partly of	506	1,574	7,647	9,754
Woolen fabrics	6,783	8,172	86,548	91,208
Worsted fabrics.....	23,547	17,275	228,192	251,622
Carpets	5,136	6,184	77,388	92,326
Apparel and slops.....	17,608	17,140	118,081	138,608
Haberdashery	6,456	4,014	71,137	73,323

LITERARY NOTES.

The July Century opens with a story of the times, "By Order of the Admiral," by Winston Churchill, author of "The Celebrity." This deals with a filibustering expedition and is full of romance. It is illustrated by B. West Clinedinst. There are two articles on "Confederate Commerce-Destroyers." Colonel John Taylor Wood, commander of the vessel, tells of "The Tallahassee's Dash into New York Waters," while G. Terry Sinclair describes "The Eventful Cruise of the 'Florida.'" Stephen Bonsal, late of the American Legation at Madrid, writes of "Holy Week in Seville," with illustrations by Joseph Pennel. Cornelia Dearth, in "An Artistic Treasure from Spain," describes the recovery of a fine antique bust at Elche, a photographic reproduction of which accompanies the article. Poultney Bigelow gives a resume of "Ten Years of Kaiser Wilhelm," writing from intimate personal knowledge of the aspirations of the Emperor and his realizations of them. A drawing by the Emperor accompanies the article. Henry Eckford briefly considers "Wilhelm II. as Art Patron," and a photograph shows the Emperor in a costume of the time of Frederick the Great with the artist Menzel. Mrs. Mahel Loomis Todd, who went to Northern Japan in 1896 with the Amherst eclipse party, contributes a paper entitled "In Aino-Land," in which she describes a wild, hairy race almost unknown to the Western world. In the series of "Heroes of Peace," Herbert D. Ward writes sympathetically of "Heroes of the Deep," with "The Author of 'Quo Vadis?'" whose works are known to American readers through Mr. Curtin's translations. James Bryce is represented by a highly important essay, in which he analyzes the conception of "Equality," and examines how far it can be realized politically, socially, and economically. "Modern Dutch Painters" are appreciatively criticized by Mrs. Elizabeth W. Champney, and there are reproductions of many noted pictures. A story of Japan, full of warmth and color, is "Purple-Eyes," by John Luther Long, whose "Mme. Butterfly" was widely talked about. Timothy Cole's engravings from Old English Masters this month are from Romney, the frontispiece, "Lady Derby," being one of the most beautiful of all Cole's engravings.

Morton, Phillips & Co., the well known manufacturing stationers of Montreal, have just issued a new edition of the Canadian Customs' Tariff, revised to the 23rd June. This excellent work of reference gives

not only every detail of the tariff and excise duties in such a manner as to interpret many points not generally understood, but it embraces a list of the warehousing ports of the Dominion, and gives table of sterling exchange, the franc, German rix-mark and other foreign currencies, with the harbor dues, etc., and the text of the new Francos Canadian treaty. It is invaluable to the merchant, importer and manufacturer, and is one of those handy books that will save ten times its cost in time.

FABRIC ITEMS.

A. H. Melville & Co. have purchased the stock and business of Mills Bros, hatters and furriers, Peterborough, Ont.

Z. Paquet, the well-known St. Roch's dry goods and fur dealer, is about to erect a straw hat factory at Hare Point, Que.

M. Brennan, dry goods dealer of North Bay, Ont., has assigned to F. J. Henderson, with liabilities of about \$7,000. Assets are placed at \$8,000.

Z. Paquet, the well-known manufacturer of hats and furs, and merchant, of St. Roch, Que., has been appointed a Senator in the place of the late Hon. Peter de Blois.

H. S. Crumley, drowned on the steamer "Bourgogne," was a brother of Edward and Henry Crumley, dry goods merchants, Kingston, Ont. He was European buyer for the Rochester, N.Y., firm Sibley, Lindsay & Carr.

Garnet Liddell, the eighteen-year old son of M. Liddell, of the firm of Liddell, Lesperance & Co., wholesale dry goods merchants, Montréal, was drowned on July 10th in Lake Michigan, north of St. Jerome, where the family are spending the summer.

Mr. Wymann, one of the lost passengers of "La Bourgogne," who was mentioned as a transient German traveler, turns out to be a well-known Montrealer and head of the firm of Wymann & Fyon, fur dressers, Fortification lane. He was going to visit his native land, Alsace, with his wife and child.

The Montreal fire department has opened tenders for winter clothing, consisting of overcoats, trousers, caps, rubber coats and boots. Marc Brodeur will make the overcoats at \$11.65 each. About ninety will be required. J. A. Hebert will provide one hundred and eighty-five pairs of trousers at \$4.45. J. E. Deslauriers will make the caps, men's, seal, at \$2.25; officers', lamb, at \$7.90; one engineer's, at \$10; one chief's, at \$15; and four sub chief's, at \$12.50. J. Martin & Son supply the rubber goods.

The old-established house of Thibaudeau Bros. & Co. Montreal, is going to give up business. Already the staff has been reduced and other preparations made for a discontinuance of business. It will, of course, take a considerable time to have affairs cleared up. The business was begun in 1811 under the name of Robertson & Co. and is one of the oldest houses in business in Canada. The firm was originally composed of Scotchmen and Frenchmen, but in later years it has been an entirely French firm. It took the present firm name in 1879. The parent house is in Quebec, but the Montreal branch has been the head of the business for some years. Hon. Alfred A. Thibaudeau is the head of the firm. He was made a Senator two years ago. The Quebec house will continue business as before.

CANADA GARNETTING COMPANY.

Owing to the steady increase in its business the works of the Canada Garnett Co., of Montreal, have been removed from Bannockburn st. to a larger factory on the canal bank. This factory, of which Robt. S. Fraser is proprietor, now occupies the whole of the old Montreal Saw Co.'s buildings, just west of the Seigneurs st. bridge, the works being three times the size of the Bannockburn st. place. The main building, about 60 x 40 feet, contains three stories and basement. The ground floor is chiefly used as a rag stock room and the upper stories are devoted to the work of sorting and blending. From the top flat, where each class of rags is separated into different blends, the stock is injected into the mouth of a tubular chute which conveys it direct into the picker room. This room, which is about 50 x 40 feet, is

completely shut off from the rest of the works by brick walls and fire-proof doors, and contains two 18 inch pickers and a duster of the latest type, capable of cleaning about three times the quantity of rags that the old style machine could handle in a given time. The carding and garnetting room occupies the whole of the basement. There are three Garnetts—two 60-inch, two cylinder Garnett machines for medium and coarse stock, and a 60-inch two-cylinder card machine, fitted with self-operating Barnwell feed for merino stock. Of the garnetting machines, one which weighs ten tons, is a three-cylinder machine of the latest type for fine stock, and turns out excellent work. Water is the motive power, the wheel being supplied from the canal. While water-power is used for driving the machinery and operating the hoist, etc., the establishment is provided with a 40-h.p. boiler for heating the building and providing steam for the carbonizing and drying rooms. These operations are carried on in a separate building which contains the dye vats and tanks for neutralizing and washing the rags, the hydro-extractor—a fine 55-inch machine, made by the well-known firm of Broadbent & Sons, Huddersfield, England—and last, but most important, the carbonizing chamber and gas-retort. Mr. Fraser has constructed a new type of carbonizer which he confidently believes will treat a greater quantity of rags and do it with more uniformity than any carbonizer hitherto invented. As this new apparatus is the subject of a patent now pending, no details of it can be given at present, but in a future issue we hope to be able to describe its operations and report upon the quality of its work. The establishment is lighted throughout by electricity, and Mr. Fraser is justly proud of the progress his establishment has made. While his manufacturing department has thus developed, Mr. Fraser's mill supply business has also grown till larger premises have been found necessary. He has therefore moved from 3 St. Helen st. to 17 Lemoine st., where he occupies three large flats and a loft. Stocks of wool, cotton and textile mill-supplies are here kept. Mr. Fraser is the only direct importer of Peruvian cotton in Canada. Mr. Fraser is also having sent from England a machine for re-covering metallic brests, burr cylinders and Garnett machines. Messrs. Garnett supply the patent wire for this purpose, and Mr. Fraser will shortly be able to take orders for re-covering all metallic rollers. Formerly these were done in the United States or sent to England.

—European countries are wakening up to the advantages resulting from water power. Engineering, London, sums up recent progress thus: The utilization of water power, which has been left comparatively unnoticed and unexploited for thousands of years, is now progressing by leaps and bounds. Not only have private initiative and private capital been extensively interested in this movement, but in various countries the Governments have more or less directly stepped in. This has hardly been done in a more rational manner anywhere than in France, where the Minister of Public Works has framed regulations for the most advantageous exploitation of water power. It is proposed that the Government shall grant concessions for the use of water power to private individuals or to companies, as the case may be. The authorities hope that it will be possible, by properly utilizing the water power of the country, to materially reduce the imports of coal, which, for the last 10 years represent an annual average of some £6,000,000. The aggregate water power of France is estimated at a very high figure, of which at present only about one-twelfth has been exploited. Most of the important waterfalls are located high in the mountains, and have hitherto had a merely local, if any, importance. There are, however, several good-sized waterfalls more favorably situated, although the distance has ceased to be a moment of great importance. In the neighborhood of Lyons there is a Rhone fall estimated at 12,000 horse-power, the Loire is thought capable of yielding some 1,000 horse-power, easily available, etc. Apart from the merely financial advantages, a rational utilization of the immense water power is also likely to prove a social benefactor, inasmuch as it is likely to decentralize numerous industries, calling forth industrial life in new

places; and, it is hoped, give an impetus to many home industries which have nearly vanished, but for which the easily distributable electric power is so admirably adapted. Also, the Swedish Government is keenly alive to the question of electric transmission of water power, and one or two schemes of this nature have already been brought forward. The most recent is the utilization of the large Eefkarleby waterfall, owned by the Swedish State, and situated some 55 miles from Stockholm. The water power of the fall is calculated at no less than 100,000 horse-power, but the present project only deals with one-fifth of this large total, which it is proposed to transmit to Stockholm, where, with a loss of 25 per cent, 15,000 horse-power would be made available. The power transmission installation is calculated to cost some £231,000, the power station, with machinery, about £178,000, and buildings, etc., in Stockholm, £28,000, altogether, some £440,000. The rent for a horse-power per annum in Stockholm is estimated at about £2 4s., or altogether some £33,000 per annum, which must be considered very satisfactory. Both in Sweden and Norway considerable amounts of water power have been applied to the manufacture of calcium carbide; in the latter country the erection of a large new factory is under consideration.

Among the Mills

Co-operation is one of the guiding principles of industry to-day. It applies to newspapers as to everything else. Take a share in "The Canadian Journal of Fabrics" by contributing occasionally such items as may come to your knowledge, and receive as dividend an improved paper.

The Canning, Ont., woolen mills are offered for sale.

Lazier Bros' woolen mill, Lonsdale, Ont., has closed down for a time.

The Berlin Brush Co. was burned out July 11th. The loss was about \$3,000.

W. C. Caldwell, Aberdeen Woolen Mills, Lanark, Ont., is putting in some wide looms.

Whitby, Ont., has voted a bonus of \$10,000 to the King Tanning Company of that town.

Jackson Bros., Clinton, Ont., clothiers, have a contract for the manufacture of G. T. R. uniforms.

Owing to the brisk demand M. B. Perine & Co., Doon, Ont., are making binder twine from flax.

The Guelph, Ont., Linseed Oil Co., is preparing its plant to manufacture oil during the coming season.

Herman Zapfe, foreman of the Berlin, Ont., Felt Boot Co.'s tannery, died recently of cancer in the stomach.

Winnifred McPherson, Berlin, Ont., has taken a lucrative position with the Eagle Knitting Co., Hamilton, Ont.

There was a small fire in Dontigny & Hughton's mill, Arnprior, Ont., June 18th. The fire started in the picker room.

The Dundee Woolen Mills property has been sold to L. Schweitzer of Bridgeport, Ont., Mr. Schweitzer will operate the mills.

The Moorehouse Manufacturing Co., Guelph, Ont., has received an order for a quantity of waterproof goods for the Klondike.

Mrs. Ephraim Reid, of Ferguslea, Ont., died last month. Mrs. Reid was the mother of Geo. Reid, mill supplies, Duke street, Toronto.

We understand that Geo. Pattinson, half owner of the Preston, Ont., Woolen mills, has bought the interest of the Fergusson estate.—Galt Reporter.

A. Morrison, late of the Hawthorne Woolen Co.'s mill, Carleton Place, Ont., has been appointed as the new manager of the Cobourg woolen mills.

Grace & Rathwell, Killaloe, Ont., have built a mill 30x45 feet, and three stories high, which has been equipped as a one set mill by Geo. Reid, of Toronto.

The Rosamond Woolen Company, Almonte, Ont., has recently thrown out the last of its narrow looms, and is now fully equipped with broad looms.

A young man named Chas. Robideau had three fingers of his left hand completely severed in the picking room of the Canada Cotton Mill, Cornwall, Ont., recently.

Geo. Reid, mill supplies, Duke street, Toronto, has recently received a large consignment of card clothing supplied by Samuel Law & Co., the well known English firm.

The Gale Manufacturing Co., manufacturers of white-wear, etc., Toronto, lost its premises by fire recently. The loss was total, but was covered by insurance amounting to \$46,500.

Ker & Harcourt, manufacturers of bobbins and spools, Walkerton, Ont., are building a new factory at Parry Sound, Ont., to which they will move their business about Sept. 1st.

F. A. Clarry, of the Maple Leaf Woolen mills, Markham, is putting a new boiler into the mill, which has been generally overhauled and improved since he came into the management.

A boy named Victor Desbien, employed at the Paton Manufacturing Company's mill, Sherbrooke, Que., fell down the elevator recently, sustaining severe but not dangerous bruises.

Henry Gray, night watchman in the Almonte Knitting Co.'s mill, Almonte, Ont., was shot and killed by burglars early on the morning of June 29th. No trace of the murderer has been found.

The Odessa woolen mills have been purchased by Mrs. L. Booth, mother of N. E. Booth, former proprietor, and are now being run by her under the firm name of the Booth Woolen Mill Company.

Work on the new felt factory, New Hamburg, Ont., is almost completed. A new high speed engine and boiler have been put in, the machinery set in order, and everything will be in running order shortly.

The R. Forbes Co., of Hespeler, Ont., is putting in a new electric light plant for the worsted and knitting mills. The old machinery has been discarded and a new lighting plant of high efficiency is being installed.

Among the new industries of Ottawa is a clothing factory, of which R. J. Smith & Co., are proprietors. The office and works being at 268 Sparks street. Mr. Smith, of this firm, is the inventor of a new system of cutting operated very successfully in Ottawa known as the "Rapid Delineator Pattern Co.," and this system has been introduced into the clothing factory. The new firm manufactures men's and boys' clothing.

Wool Washers
Dryers and Carbonizers

KITSON - - -
MACAINE CO.
LOWELL, MASS.

Dick, Ridout & Co., Toronto, have bought the Cobourg, Ont., Woolen mills and will operate the mill with Arch. Morrison as superintendent. The bag manufacturing plant of the firm now running in Toronto, where about 60 hands are employed, will be moved to Cobourg, where probably an additional building will be put up; though this matter is still under consideration.

The Dominion Brussels Carpet Co., of Elora, Ont., wishes it to be understood that the statement made in the issue of The Canadian Journal of Fabrics for June was incorrect, and that instead of stopping the mill as asserted and not intending to start up again in Elora, they are running at full time on fall orders, and that they have just completed a fine line of Brussels carpet samples.

Recently an accident occurred at the Paton Manufacturing Co.'s mills, Sherbrooke, Que., when P. Roy was seriously injured. So far as can be learned no one can tell exactly how the accident occurred, but it is supposed that the unfortunate lad was struck by a pulley, as the marks on his face would indicate. He was found on the floor unconscious, with blood flowing from a wound on the right temple.

Wm. Sommerville, manager of Cornwall, Ont., Manufacturing Company's woolen mill, died July 14th, after a short illness. Deceased was born at Cobourg 46 years ago. He was connected with the woolen industry in Peterborough, and afterwards in Montreal, where he was manager of the Globe mills previous to coming to Cornwall. He leaves a widow and three sons. The deceased's brother from the Western States is acting superintendent of the mill.

Chas. Riordan, St. Catherines, Ont., has about completed arrangements with the town of Hawkesbury, Ont., to build a \$200,000 pulp and paper mill in that municipality, promising that he will begin with not less than 100 hands. The town gives several valuable concessions, such as freedom from taxation, a large area of land, etc., and work will be begun immediately. Mr. Riordan has purchased extensive timber limits in the vicinity from Mr. J. K. Ward, Montreal.

Wm. McMoran, St. Hyacinthe, Que., has made a proposition to the town of Edmonton, N. W. T., to erect and operate in town a woolen mill at a first cost of \$15,000 or \$20,000, provided a suitable free site could be secured and exemption from taxation allowed for twenty years. The council decided to submit a by-law to the ratepayers on this basis, provided Messrs. McMoran would refund the amount expended re the by-law in case the work was not carried out by them as agreed.

W. Meiklejohn has been appointed superintendent of the Excelsior woolen mill (late Globe Woolen Mills), of Montreal. Mr. Meiklejohn was born at Tillicoultry, Scotland, and has been brought up to the woolen manufacturing business from a

boy. He was 12 years at the famous mills of Bliss & Co., Chipping Norton, Eng., and on coming to Canada was some years superintendent at the Paton mills, Sherbrooke, and afterwards a short time at the Granite mills, St. Hyacinthe.

A local joint stock company with James Russell, president; F. Montcastle, vice-president; John Sinclair, treasurer, has been formed to operate a woolen mill at Dundalk, Ont. The mill building is of brick, and steam power will be used. W. H. Peterson is secretary and manager. Geo. Reid, mill supplies, Duke street, Toronto, has equipped the mill with machinery, which is first-class in every respect. It is a one set mill and will do custom work chiefly, running on course tweeds, etc.

Frank E. McKyes & Co., the new proprietor of the Dominion Button Works, 440 Visitation street, Montreal, are greatly improving the quality of their goods, more especially cloth-covered buttons for underwear. They expect soon to announce an entirely new plant of improved machinery. Stanley L. Macbean, B.A.Sc., a young inventor of much skill, is in charge, and will remain with the firm. We hope in another issue to refer to the new automatic button making machines designed by Mr. Macbean.

J. Y. Wilson, of the firm of Wilson & Co., wool merchants, Toronto, has just returned from a business trip to England. Mr. Wilson was present at the wool sales in London and reports a general advance in prices. This advance is equal to 7½ per cent. over those of last sales, or 1d. to 1½d. on grades most in demand for the Canadian market. Among the passengers on the steamer Mr. Wilson came out upon was Sir Richard Tangyes, of the great engineering firm of Tangyes, Limited, Birmingham. Sir Richard is a great traveler, having circled the globe six times.

The Sherbrooke, Que., Yarn and Woolen mills were destroyed by fire, June 15th. The alarm was sent in about twenty minutes to eleven, but the fire had gained considerable headway before the brigade arrived. The inflammable nature of the building made a stubborn fire to fight, but fortunately the firemen succeeded in confining the fire to the main building of the factory. The three top stories were completely gutted, and the loss in machinery and stock will amount to several thousand dollars. The building and stock were only insured for about \$14,000. The Whitney Electric Co. also lost considerably by water.

Geo. Morrison, boss carder in the Hawthorne Woolen Mills, Carleton Place, Ont., severed his connection with that factory, June 15th, and has returned to Montreal. Before leaving his comrades made him the recipient of a present and an address. The souvenir took the form of a handsomely engraved gold locket.

The Royal Electric Co. MONTREAL TORONTO

CANADIAN MANUFACTURERS OF THE

S. K. C. TWO-PHASE APPARATUS

Alternating Current Generators

Alternating Current Motors

Alternating Current Arc Lamps

Served from the same circuit

S. K. C. TRANSFORMERS

Correspondence solicited for all kinds of Electric Installations.

—In the time of Homer the manufacture of flax, if not unknown to the Greeks, was practised on a small scale, for the use of lincn cloth was rare amongst them; indeed, the only part of Greece where flax is recorded to have been grown was Elis.

—The Chinese were weavers nearly 5,000 years ago. Joseph's famous coat was made of camel's hair. Under the old Mosaic law the Hebrews were not allowed to wear garments of mixed linen or wool. It is said the American Indians made cotton garments before the coming of Europeans. Calico came originally from Calcutta, India. Broadcloth originally got its name from its width. There are more than 32,000 varieties of woolen goods known. Persons with incomes less than \$500 a year were forbidden to wear furs in England in the fourteenth century. An American society organized for the encouragement of wool production in 1765 forbade the eating of mutton or lamb.

SITUATION WANTED

Wanted situation as manager or superintendent of woolen mill by a man who has had a large and most successful experience on shoddy goods. Married; 39 yrs. of age. Address J. E. C. L., care Canadian Journal of Fabrics.

SITUATION WANTED

Experienced long chain dyer and yarn printer desires situation. Fast colors. Economical. Nine years with leading gingham, shirting, and fancy cotton, woolen and silk dress goods mill in New England. Age 39. Married. Address "M," care of Canadian Journal of Fabrics.

Wanted

By experienced Cotton Bleacher and Finisher, situation in Canadian mill. Best of references covering a long period of years. Age forty. Married.

Apply "WEST POINT,"
Care Canadian Journal of Fabrics.

Situation Wanted.

WANTED, situation by an **ENGLISH DYER**; an all round hand; used to all the new colors and latest improvements. Willing to come to Canada to fill a permanent position. Address,

"J. D.,"

Care of CANADIAN JOURNAL OF FABRICS.

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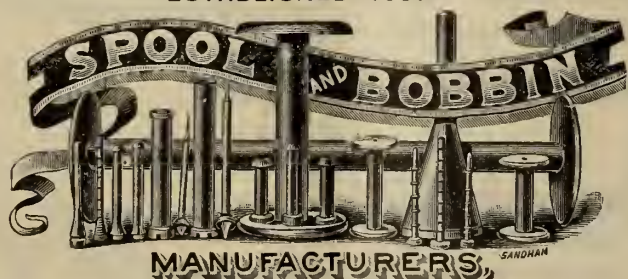
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FINISHER—who is an expert fuller, is open for a change; has family of workers. A very valuable man for medium sized mill, or would accept second hand in first-class mill. Address "D," care of Canadian Journal of Fabrics.

FOR SALE

A FELT MANUFACTURING PLANT

Picker, Cards, Felter, Fulling Mill, Cloth Press.

All in good order—will be sold en bloc or singly.

Lancaster Machine Works, 113 Oak Street, Lancaster, Ont.

CHEMICALS AND DYESTUFFS.

A good steady demand exists for all kinds of dyestuffs and chemicals, with few changes in price to note. Sulphurs are easier for forward delivery, being scarce and firmly held on spot. Castor oil is slightly weaker. Chlorate of potash is higher owing to the rumor of a proposed combination of makers to control the output. The following are current quotations in Montreal:—

Bleaching powder	\$ 2 00	to \$ 2 10
Bicarb. soda	2 05	" 2 10
Sal soda	0 70	" 0 75
Carbolic acid, 1 lb. bottles	0 35	" 0 37
Caustic soda, 60°	1 75	" 1 80
Caustic soda, 70°	2 00	" 2 10
Chlorate of potash	0 13	" 0 15
Alum	1 35	" 1 50
Copperas	0 70	" 0 75
Sulphur flour	2 50	" 3 00
Sulphur roll	3 00	" 3 50
Sulphate of copper	4 50	" 5 00
White sugar of lead	0 07	" 0 08
Bich. potash	0 09	" 0 10
Sumac, Sicily, per ton	55 00	" 60 00
Soda ash, 48° to 58°	1 25	" 1 50
Chip logwood	1 90	" 2 00
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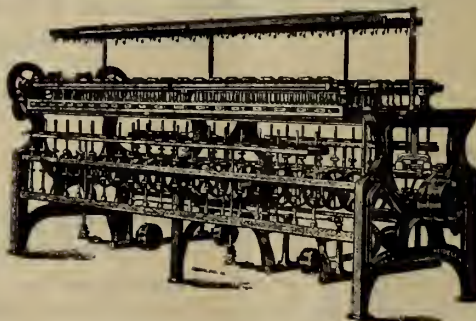
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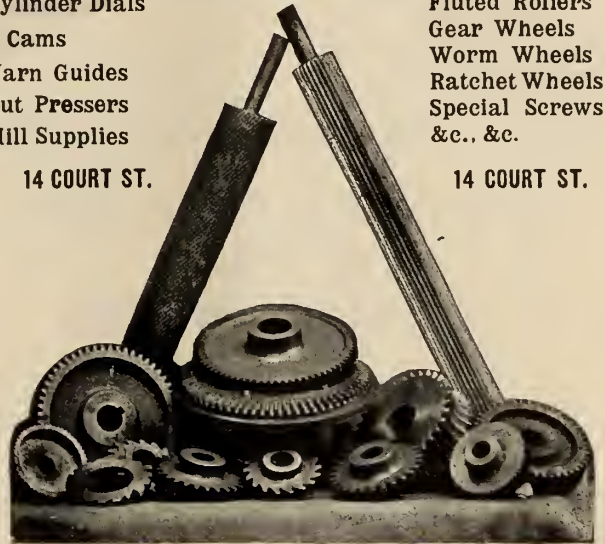
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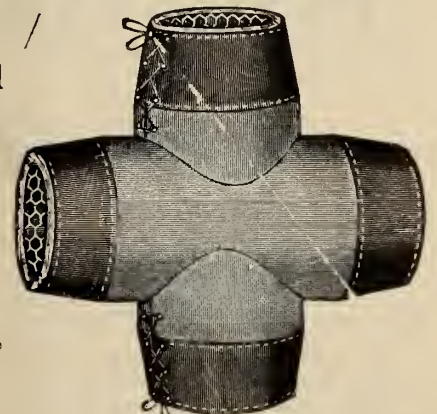


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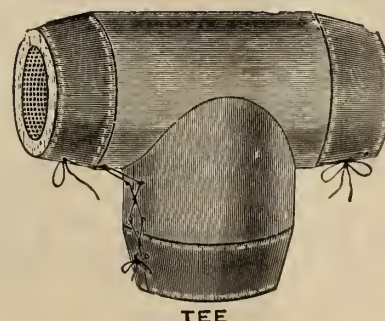
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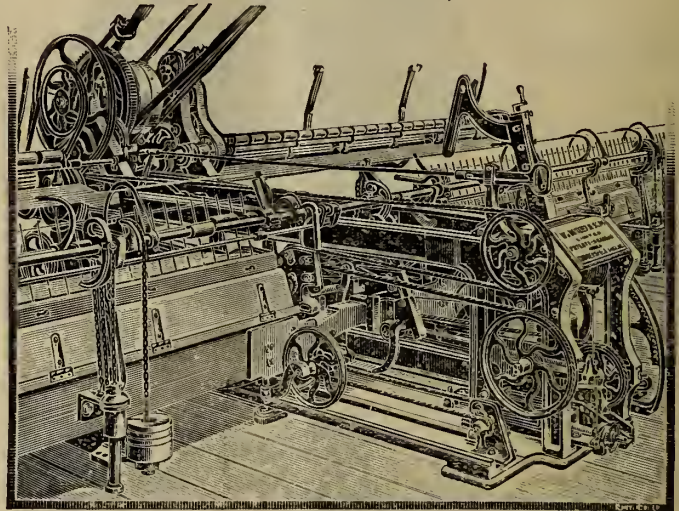
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It costs you nothing, and will be to your advantage.
If you do not report, do not complain if your name and business are incorrectly given, or, possibly, omitted.

The following is the information required in the various branches of trade:—

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Carding or Fulling Mills: Name; address; capacity; date established; and whether steam, water or electric power.

Cordage and Twine, Jute and Flax Mills: Name; address; date established; capacity; steam, water or electric power; kind of goods made and material used (whether cotton, hemp, flax, etc.); selling agents, if any.

Sail, Tent and Awning Factories; Upholstery, Wall Paper and Window Shade Factories; Rubber, Oil Clothing, Felt, and Miscellaneous Factories in Textile Fabrics: Name; address; date established; steam, water or electric power; description of goods made; and selling agents, if any.

Clothing, Glove and Mitt, Collar and Cuff, Suspender and other Factories in Men's Furnishings; Button Factories; Corset and Ladies' Wear Factories: The same as in preceding list, adding, whether selling through agents, or to the trade direct; or whether manufacturing for custom work only.

Hat Factories: Name; address; date established; steam, water or electric power; whether manufacturing Wood Felt, Fur Felt, Silk, Cloth or Straw Hats; and whether selling to the wholesale or retail trade.

Fur Manufacturers: Name; address; kind of goods manufactured, and whether selling to the wholesale or retail trade.

Bleachers, Dyers and Feather Dressers: Name; address; whether Job Dyers, etc., of garments only, or feathers, etc.

Laundries: Name; address; and state whether a machinery or hand laundry.

Paper and Pulp Mills: Name; address; Officers, if a stock company; capacity, in tons per 24 hours; date established; steam, water or electric power; number and capacity of engines and cylinders; kind of paper manufactured; selling agents, if any.

Manufacturers' Agents or Commission Merchants: Name and address; and in what branch of the Textile trade (whether Wools, Cottons, Hats, Furs, Carpets, etc.

Wholesale Dealers: Name, address and line of business; specifying whether dealing in any or all of the following branches: Dry Goods, Clothing, Men's Furnishings, Tailors' Trimmings, Carpets, Upholstery Goods, Hats, Furs, Millinery and Ladies' Wear. In case you manufacture Fabrics also, state in what lines.

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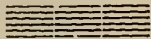
The P. & A. Corset Company (limited), capital \$50,000, Farnham, Que., has been incorporated to buy and sell all kinds of stuff, and other articles used in the making of corsets, veils, knitting and other manufactures; to make corsets, veils, knitting goods and other similar goods.

The Charles Turnbull Co., of Galt, Ont., has purchased the ground on which stood the Mackay woolen mill, recently burnt, and are now building an addition to the present large knitting mill. The new wing, which is now in the course of erection, is 133 feet long and three stories high.

Canadian Colored Cotton Mills Company.

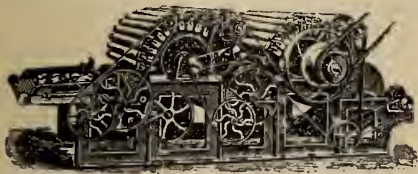
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The Northrop Loom Co., of Canada, notice of the incorporation of which appeared in last issue, have started the building of their factory at Valleyfield, Que., and expect to be ready for operations early in September. The new company will manufacture the Northrop loom as a specialty, but will probably manufacture other lines of weaving and spinning machinery for both cotton and woolen goods. The works will be operated by electric power derived from the Montreal Cotton Co.'s electric plant described in a former issue. The Northrop loom, which is designed especially for plain and twill cottons, has some remarkable features, and is destined to give the Canadian mills who adopt it a great advantage in manufacturing.

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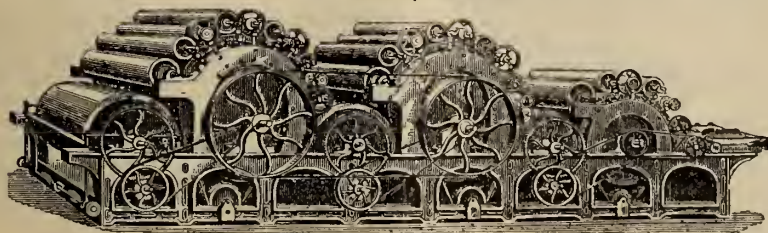
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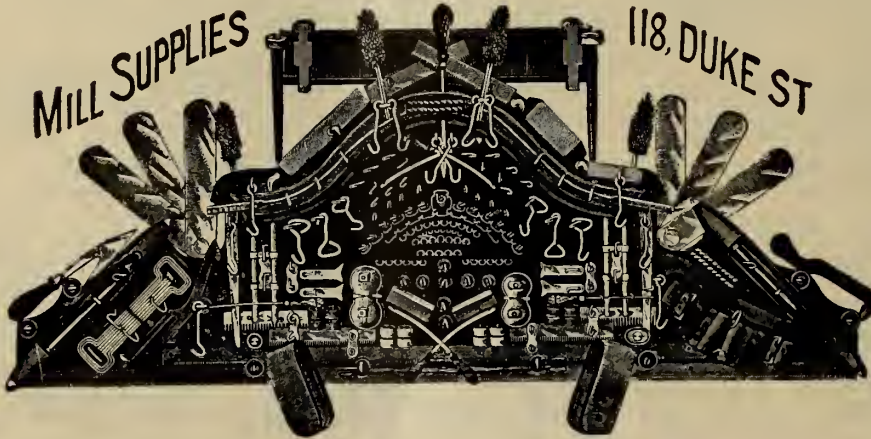
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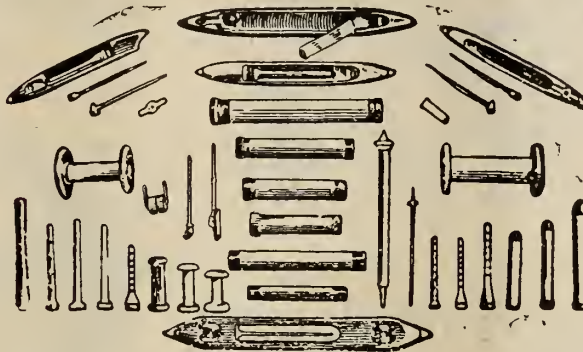


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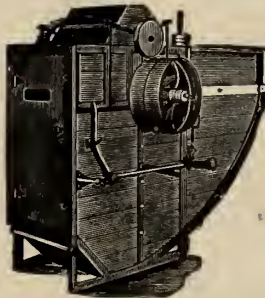
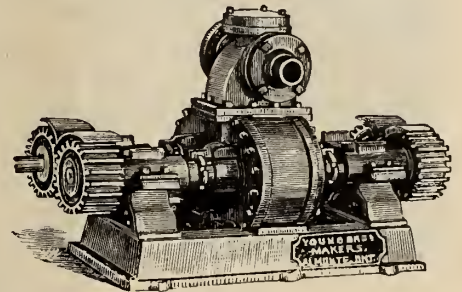
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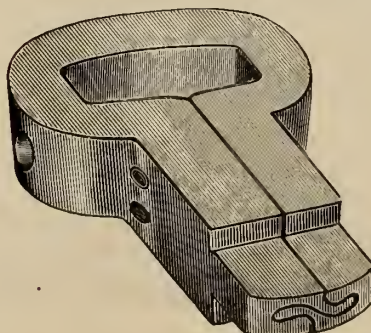
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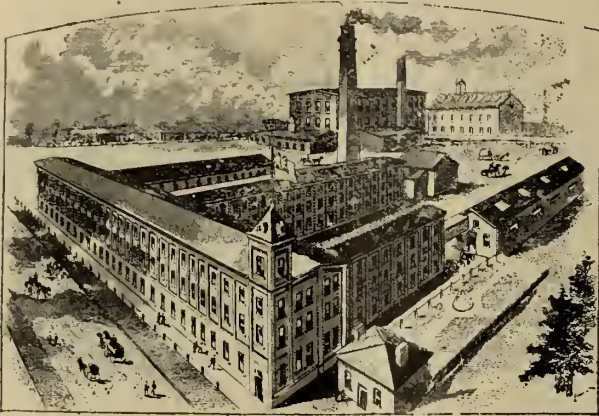
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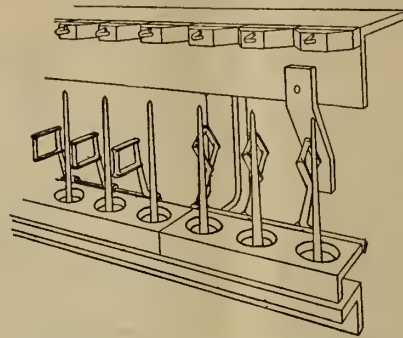
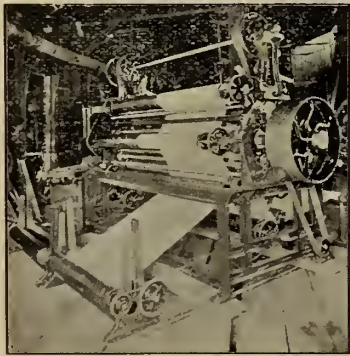
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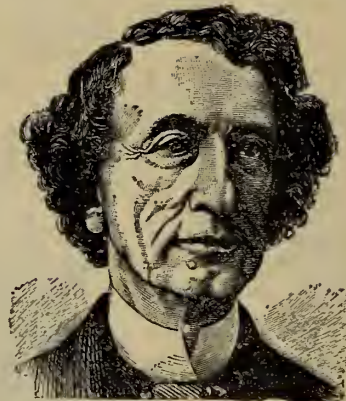
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Do you want to refer to details of the Tariff on Textiles, or to statistics of all branches of these trades and their relations with other countries?

If so, you need this Book and you ought to be in it.

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THE first edition of the **Canadian Textile Directory** was published in 1885, and made a work of 318 pages. It has since grown till it has made a volume of 486 pages, and the coming edition will probably be larger still. Some new features will now be added, and every pains will be taken to make it comprehensive and correct.

Taking it all round, there is no work published containing the amount and variety of information on the textile and allied trades that will be found in the **Canadian Textile Directory**; and the number of copies ordered from abroad for purposes of reference is continually increasing, the last edition having been exhausted some time since by such calls.

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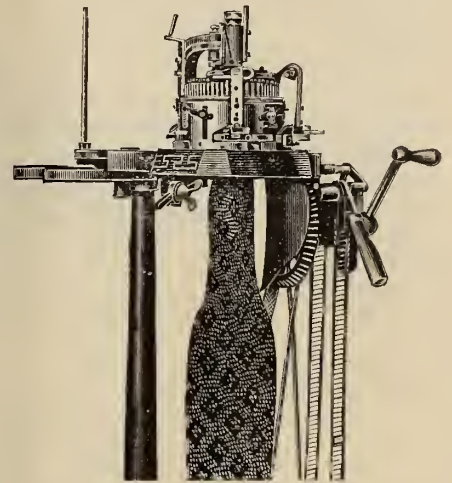
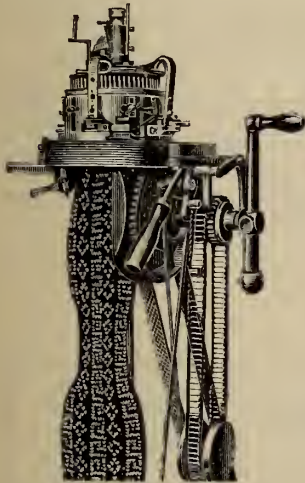
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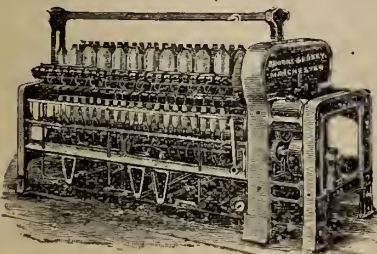
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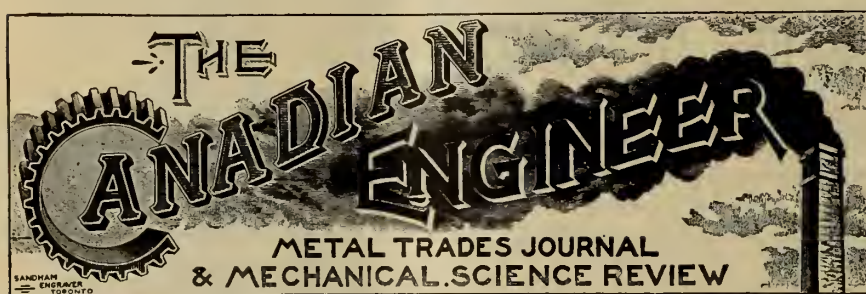
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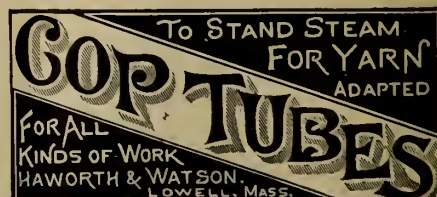
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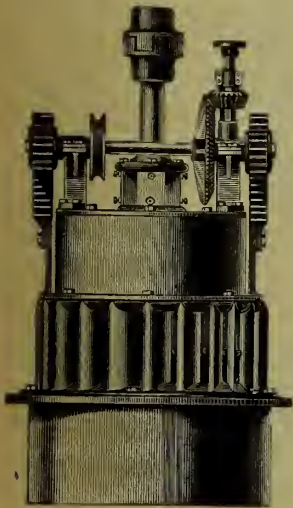
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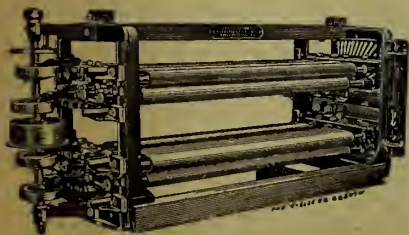
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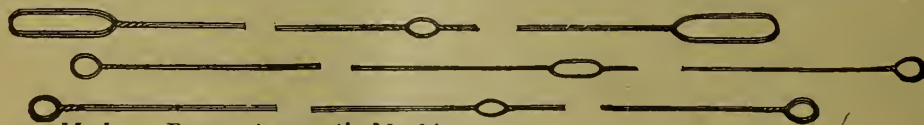
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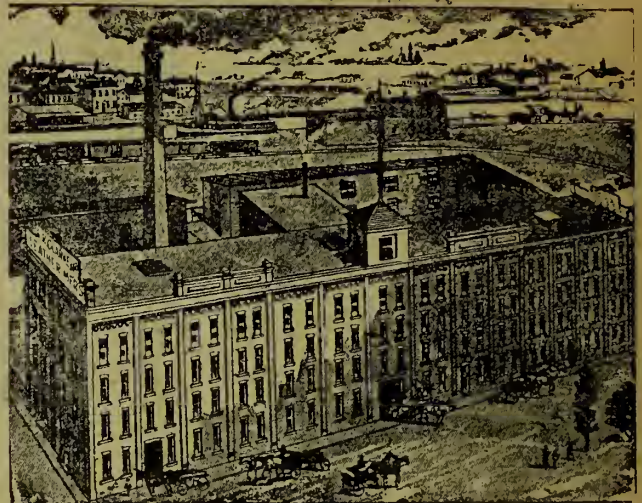
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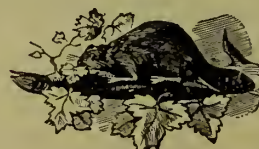
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Vol. XV.

TORONTO AND MONTREAL, AUGUST, 1898

No. 8.

Canadian Journal of Fabrics

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Editorial.

CANADA'S FIRST LINEN FACTORY.

Some years ago we gave an account of the first attempt at manufacturing linen cloth on power looms in Canada. This was during the American Civil War, when owing to the cotton famine, the price of linen fabrics went up to such a pitch that the industry seemed to offer a splendid field in Canada. Had the war continued long enough to enable the industry to obtain a good footing in this country, it is possible that linen manufacturing

might have been one of the staple industries of Canada to-day, as our climate produces an excellent staple of flax, but the war closed just as the factory got fairly started and prices of both linen and cotton went so low that not only was the business in Canada ruined, but great injury was inflicted on the industry in Ireland itself, where linen manufacturing had been acclimatized for generations. Those who read our former sketch of this industry will remember that one of the promoters was George Stephen of Montreal, (now Lord Mount-Stephen) and that the factory building is still in existence as part of the woolen mills of Ferguson & Pattinson, Preston, Ont. Lord Mount-Stephen and his old secretary, John Turnbull of Montreal, have been kind enough to procure through Adam Warnock, of Galt, and John Homuth of Preston, some further particulars regarding this interesting venture. Mr. Turnbull is under the impression that the linseed oil machine referred to in the correspondence was sold to parties in Montreal, and after being worked in that city for several years, found its way to one of James Livingston's mills in Ontario. Mr. Homuth was employed by Hunt & Elliott, as woolen manufacturer till they were burnt out and then by Elliott, Hunt & Stephen as flax manufacturer. The following are the letters referred to:

It has taken me a long time to answer your letter of the 4th, re Flax Industry. I put the inquiry into the hands of an old Preston employee of the late Andrew Elliott & Co., and you will see what he has written, and which no doubt is correct. I have added a little information which may be of interest. "When I was a very young lad in the early 30's (65 years ago), I remember seeing these old Dutch men and women clad in their home-spuns, dyed with butternut and hickory bark, a good lasting color. Their clothes were made by themselves and from an artistic point of view would hardly pass muster with our people to-day." Yours very truly,

A. WARNOCK.

Preston, March 21st, 1898.

The formation of the company for the manufacture of linen goods in Preston, Ont., took place in the year 1864. The principal promoters were Messrs. Andrew Elliott, James Hunt and Calvin Clafin, of Preston, and George Stephen, of Montreal. They began operations in the fall of the same year after the mill was rebuilt, after the woolen mill had been destroyed by fire on January 18th, 1864. The mill was in operation three and a half years. The machinery was purchased in the United States and England. After the mill closed the machinery was sold, "when it was in first-class running order at less than half its cost price." Most of the linen machinery was sold to parties from the United States. The linseed oil machinery was

taken to Montreal and sold to James Livingston, of Baden, Ont. The capacity of the oil mill was about ten barrels per day. About 26 looms were in operation and six spinning frames. Two wet spinning frames were bought at \$550 each, which were of no use and were sold as old iron. Water power was used to run the mill. The raw material was obtained in the surrounding country, Plattsville, Berlin, Preston, and Waterloo townships and other places. The fabrics produced were seamless bags, toweling and canvas for large sacks, ropes, twine, etc. The cause leading to the decline of the industry was: After the American war when everything in the Southern States was in order again, and cotton plantations were again attended to, the price of cotton caused the flax business to decline. The reason of the flax business starting here was: The promoters thought that through the war cotton would be too expensive and that linen would take its place, which it did as long as the war lasted. The oil department paid well, but the linen department did not pay, in fact, was a big loss. The flax factory in Doon, Ont., was in operation before the one in Preston; it was carried on by M. B. Perine.

Mr. Warnock adds: Mr. Perine scutched the flax and shipped it to the United States; and later on John Homuth made twines, which they continue to make, employing some 120 hands. Livingston Bros., of Baden, have made a great success of the flax business, also the linseed oil business. Flax is grown by them in Ontario, Manitoba and the United States. They employ hundreds of people in Canada, and in one factory in New England they are said to employ 600 hands. The growth of flax was first introduced into Canada, I believe, by the early settlers from Pennsylvania, who came to Waterloo township along in 1794, and the early part of this century. They made the flax into clothing, doing the scutching, spinning, dyeing and weaving in their own homes. The material was woven into small checks, using butternut bark and indigo mostly for colors. The garment was durable, all right for summer, but unsuitable for winter; but in those days (60 to 80 years ago), we had no Canadian tweeds.

DEPRECIATION.

One of the vexed questions which arise in the conduct of all industrial businesses is that of the amount which should be annually set aside for depreciation. We are not going into the controversy as to the relative merits of deducting a sum for this purpose from the original value of the thing depreciated or from its annual depreciated value. A good deal can be said on this, but it really forms part of the greater question as to what is ample depreciation, says The Textile Recorder. As a matter of fact, no general rule can be laid down, and instances are known of widely diverse practices being perfectly sound under their relative conditions. For instance one man wisely keeps his plant in a perfect state, and expends annually a large sum out of revenue in maintaining the whole of his plant in a condition which is practically that of new machinery. Another, on the contrary, takes only ordinary precautions, and if he does make any considerable repairs, adds the cost to the depreciated value of the plant. It is obvious that the sum which forms an adequate allowance in the one case is very inadequate in the other. The factor which really determines the amount is the life of the machine.

The generation which is now living has seen in al-

most every direction an enormous extension of the work of invention and construction. Even in industries in which invention has been slight, the work of the constructor has been far-reaching, and although machines may be in their essence alike, their details will be found to be far different if constructed at reasonable intervals apart. We need hardly remind our readers of this, for it has become so familiar as to be trite. Yet, we are afraid that, axiomatic as it is, the statement wants pressing home. Depreciation is affected, not only by the life of the machine as controlled by the wear of the parts, but also by its life as determined by its relative value at some future date. In other words, a machine may be rendered obsolete by the advance in constructional art during a given period as well as by its deterioration by work. It is thus necessary to keep in view both factors, and if this be done it will be seen that the controversy which we indicated in our opening sentences is very simply resolved. If the life of a machine, owing to the advance in construction, is shortened, then any addition to its value by reason of extensive repairs or any diminution in the sum set aside for depreciation annually, involves an increase of that sum in accordance with the conditions. The plant which, without placing to capital the sum expended in repairs, however great, is steadily written off, can be annually charged with a much lower sum than one which is treated in a different fashion. In either case such a sum is needed as will enable the value to be brought down to breaking up price in such a term of years as renders the machine obsolete. It is obvious that given an equal value to begin with, the annual sum chargeable can be much less in one case than in the other. This, it seems to us, is under modern conditions, the determining factor, and it is one of which it is worth while remembering the existence.

There is yet another feature arising out of present day company practice which ought to be steadily kept in mind. When old and successful industrial enterprises are brought within the scope of the Limited Liability Acts as now interpreted, it is the custom to charge to capital a large sum for which there are no assets. In some cases this extra sum is many times the value of the plant, and there is some hesitation as to what the right course is to take under such circumstances. There is no doubt that in many instances the true policy is to set aside out of profits (if made) a substantial sum as a reserve which can eventually be used to reduce the additional charge. As shareholders sometimes grow restive under this course, it may be prudent to resort to the charge for depreciation to attain the same end, and by doing this less notice is taken while there is a gradual accumulation of assets. It must not be forgotten that although the things represented by large sums cannot be said to be tangible, nor can they be brought to the hammer, they may represent the one factor by which profits are made. Thus, a monopoly of manufacture may be acquired in a single article which possesses a larger value—greater probably than that of the

plant needed to produce it, and from which the profits of the enterprise arise. It is clear that you cannot depreciate a thing which is non-existent tangibly, while it yet has a clear and enormous value. The right course is obviously to set aside a sum for reserve, but, on the other hand, it furnishes a valid and cogent reason for increasing the sum set aside for depreciation. The tangible assets are thus enhanced in value, because they are brought down to a figure which permits them always to be realizable, while at the same time they have been paid for out of the revenue during the prosperous days of the concern.

OLD STYLE CARDING v. NEW STYLE CARDING.*

In considering the difference between the old style and new style of carding, I shall not mention the difference in the cost or the number of hands required in either system, as this varies greatly in different mills, but shall confine myself strictly to the difference in the carding as I have found it by personal experience. The improvements made in the picker machinery, by attaching the feeder to the open picker, mixes the cotton better than was ever done when feeding by hand, providing we give the same attention to mixing the cotton when the bales are opened and the cotton pulled, and that we use the cotton the same way as we did when feeding by hand, that is, from the top to the bottom of the pile.

Under the old system the laps of the finisher picker were weighed two or three times a day; that is, we unrolled a lap and measured off one square yard of it, and weighed it, and that was considered the weight of the lap. There was nothing very particular about it, as the doublings of the railway head and the eveners of the head were supposed to even up whatever variation there might be. But under the new system one of the most particular places in the carding department is the picker room, and the man in charge here must be trustworthy, for here, and only here, can you do anything towards getting even work, for as the laps go from the picker room to the cards, so the roving and yarn will be, for there is nothing to even the work except what little the doublings may do. So if there is a great variation in the weight of the laps from the finisher picker, there will also be a great variation in the roving and yarn, and it will be found hard work to keep the numbers right. Consequently the picker room becomes, under the new style carding, one of the most important places of the mill, and, therefore, the overseer of the carding room should see to it that special attention is given to this department.

When I was overseeing I had my "boss" of the picker room weigh every lap as they were taken off the finisher pickers, and any that weighed over one-half of a pound heavier than the standard weight that I had

for my laps, I had him put back and run over again, and any laps that weighed one-half of a pound lighter than the standard weight were served the same way. This is not as much work, and does not take as much time as a person would imagine, for I had all my finisher pickers so they knocked off at the same time, and the boss of the picker room would push his scales to the first picker, and as the picker tender sprung out the lap he placed it on the scales and started the picker, while the "boss" weighed the lap, and either put it into the pile ready for the cards or left it standing (for the tender to run over again), and was ready for the next lap by the time it was sprung out; and so on, until all were weighed and put where they belonged, it requiring only a few minutes to do the weighing.

To make sure that he did this, and that he might not get careless, I would often go into the picker room and call my "boss" of the picker room up, and have him weigh such laps as I would pick out of the pile of laps that were ready for the card room, and in this way I was always sure of the weight of my finisher laps, and that no lap was put on a card over or under a certain weight. I also had the "boss" weigh the breaker and intermediate laps about twice a day, and regulate them as near a certain weight as possible, doing which made the eveners on my finisher pickers have less work to do than they would have had to do had I paid no attention to the weight of my laps on the breaker and intermediate pickers. This, I believe, is the only way (unless you have railway heads), in which you can secure anywhere near even roving and yarn by the new style carding, and therefore should have the constant attention of the overseer of the carding room.

The next difference between the old and the new systems is the cards. Under the old system of the wooden top flat card, there was not the amount of carding surface that there is on the revolving flat card. Again, the cylinder on the old style card tore the lap as it passed between the feed rolls, with an upward pull, which had a tendency to pull back or straighten the wire on the cylinder, making the cylinder do work that it was never intended to do, besides carrying all the leaf and dirt that may happen to be in the lap up by the tops, and what was not deposited on the doffer with the cotton was dropped between the cylinder and doffer; for if you look at the fly that is taken from under the old style card, you will notice that all the dirt is from under the doffer, while on the revolving flat card, the saw tooth lick-in strikes the cotton as it passes by the feed plate with a downward blow, knocking the leaf and dirt out of the cotton and depositing it on the floor under the lick-in, and carrying the cotton to the cylinder, thus saving the cylinder the extra work of pulling the cotton to pieces and not pulling back the wire on the cylinder, as on the old style, and yet cleaning the cotton of leaf and dirt better than under the old style, and doing it before the cylinder received it. Every overseer of a card room knows that under the old sys-

*A paper read by John R. Mason, Fall River, Mass., before the New England Cotton Manufacturers' Association.

tem, when the self-stripper on the card raised the top to strip it, a lot of fly would gather in the open space caused by the top being raised, which (when the top was again dropped into its place), was blown on to the cylinder, causing a thick streak across the sliver, besides letting dirt from the stripper get on to the cylinder. A great many overseers have tried to prevent this in one way and another. Someone suggested having a stripper made which would traverse very slowly from one top to another, but which would raise the top strip and lower it again with increased speed, so as not to have it raised from the cylinder long enough for much fly to gather in the open space.

Now, on the revolving flat card, the naps are constantly moving forward, carrying whatever dirt may have collected in them to the comb, where they are stripped without a flat being raised from the cylinder, and consequently there are no streaks in the sliver, and no dirt getting on to the cylinder on account of the flats being raised from the cylinder. Then as the settings on the old top cards were anywhere from 1-32 of an inch to 1-16 of an inch from the cylinder, it depended altogether on the condition that the clothing was in. If that was in good condition, the settings were closer than they were if the clothing was a little soft; and again, as the cylinders were not perfectly true, the settings could not be close, while on the revolving flat cards the cylinders being very nearly true, we set a great deal closer than on the top cards, our settings being 5-1,000 of an inch to 9-1,000 of an inch, in consequence of which we get a great deal better quality of work from the new system than we ever did from the old system.

The question has often been asked, why is it that some men who have been very successful running the old style carding fail when they try the new style carding? I think from what I have observed that the reason is that they do not realize the difference between the two systems, and therefore are unable to overcome the difficulties. For instance, I have a case in mind of an overseer over the old style carding, whom the superintendent thought was the best or one of the best carders in the world, he did so well. After a while that superintendent went to another mill and took his overseer with him to start up a room with new revolving flat cards. In less than ten months these cards were making such bad work that there was talk of throwing out the cards and putting in a new make, as the cards were poor. Just at this time, and before anything was decided on, that overseer left to take charge of a larger room, and a man was hired to take his place, who, realizing what was needed, went to work on those cards, and the consequence was that in less than a year those cards were doing as good work as any in that city, and that corporation has since bought over 70 cards of the same make, showing that the fault was not because the card was poor, but that the overseer did not realize the difference between the old and the new style carding. For while a good overseer may get good work from a poor

card, yet a poor overseer may get poor work from a good card.

There are at least three things that should be required of an overseer of the new style carding. First, he must understand the cards in his room. This he can soon do by being among the cards a part of the time. Second, he must know when certain things should be seen to, and, third, he should know that those things are attended to at the time they ought to be. For the new style carding requires the constant attention of the overseer to the grinding, setting, stripping and cleaning of the cards. The overseer who gives these things his personal attention, and has a regular system for his work, so that one thing follows another and the grinder and strippers know just what to do at certain times in the day, and therefore has everything kept in order, will not be the overseer who will make a failure of the new system, but will be successful.

Another thing we have on the new system that we did not have on the old is the combination draft on the fine roving frames. By this draft we can change 1-10 of a tooth or 5-100 of an inch of draft, and should therefore (with the attention given to weight of laps), be able to keep our numbers quite even. Another difference between the old and new style carding is the general appearance of the cloth. Under the new system the cloth, by reason of the better carding (caused by closer settings on the cards and more dirt being taken out of the cotton, presents a cleaner and smoother appearance than it did under the old style of carding.

SOME OF THE ECONOMIC AND PRACTICAL ASPECTS OF ELECTRICAL POWER DISTRIBUTION IN FACTORIES.*

BY HENRY A. MAVOR, LONDON, ENG.

During the two past years there has been in this country a decided awakening of interest in the possibilities of electric distribution of power in factories. Long-distance transmission is less interesting to us because of our local conditions. Proposals have been from time to time made to turn to account such sources of power as exist, for example, at the Falls of Clyde, or even to use the tides for the production of electric energy for transmission to distant points. The fact that fuel is cheap and the cost of transport small will probably militate against the realization in the near future of such dreams. For such power-using centres as we propose to discuss in the present paper, it may be taken for granted that, under existing conditions, the power can be produced at or near the point at which it is to be used so cheaply as to preclude any consideration of means for transmitting it from a distance.

A very interesting scheme is on foot in the Midland Counties of England to generate electricity at the pit-head, and to transmit it to power-using centres in the form of high-tension alternating currents. It is antici-

*A paper read before the Institute of Engineers and Shipbuilders in Scotland

pated that many users of power, who are at present working under uneconomical conditions, will find it advantageous to avail themselves of this supply, which is expected to be available at a price something like one penny per horse power per hour. It seems probable that the operation of such a scheme would only be commercially practicable in districts where the local authority does not control electric supply, because when the local authority has to be dealt with the price obtainable from that authority would not probably exceed the rate at which they could themselves produce the power, without any allowance for profit. As the local authority could, and doubtless would, avail itself of the most efficient means of power production, the only item to set off as a possible profit to the supply company would be the railway carriage in the coal. Unless under very exceptional circumstances, it is hardly conceivable that this margin would be sufficient to cover the very heavy capital cost of the generating plant. On the other hand, undoubtedly there is an enormous field for the electric motor among small users of power who can obtain the electric current at a moderate rate from supply companies or local authorities. This class of consumers form an important group by themselves.

I propose in this paper to confine attention to those factories where the total power required is upwards of 50 horse power, and where the power is produced on the consumer's premises. To what extent and in what manner in such factories can electric power transmission be advantageously used? The conditions as to requirement of the work to be done, and the present methods of doing it, are so various that it is difficult to enter upon a useful discussion on general lines.

Two typical groups may be chosen for discussion:

Group I.—Factories where the power is delivered from one main engine through gearing, belting, or ropes to line shafting, which is in turn belted or geared to machinery closely grouped round the source of power. This includes most factories where the machinery runs at a constant speed on a fairly steady load, as in spinning and weaving factories.

Group II.—Where the nature of the work is such that the power must or ought to be delivered direct from the prime mover at the point where it is applied to the work. This includes factories where the machines to be driven are widely divergent in character, are widely spaced, and run at different and varying loads and speeds, as in paper mills, printfields, chemical works, steel works, foundries, shipyards, and many engineering establishments where work of a varying character has to be accomplished. This group affords by far the most promising field for the electrical engineer.

In the first group advantage can, to a large extent, without the use of electrical transmission, be taken of the direct economies to be gained by the centralization of power production; and the electrical engineer must, as a rule, base his argument in favor of the adoption of electrical transmission rather on such points as saving

of space and cost of construction, absence of noise, and additional convenience, than on any claim for direct economy in coal consumption. Of course there are very many cases where an enormous saving could be accomplished, even in such factories, by the introduction of a good modern electric equipment; but, generally speaking, an equivalent saving could be gained by more direct means. There are, however, important advantages gained where electric motors can be applied directly to the working of machinery of production. No matter how well engineered the arrangements may be in the first instance, all systems of transmission by rope or belt are subject to increasing and varying slip; and, apart altogether from the loss of power arising from this cause, this has the very serious result of reduction in speed of the machinery of production. Thus, a slip in the belt or rope driving a machine or group of machines reduces the output in direct proportion to that slip, while the total expense of production remains the same. It is quite certain that this is the frequent source of loss even in the best managed factories. The electric motor can be arranged to run at constant speed if the electric pressure be maintained constant, and this can be and is easily regulated, observed, and recorded automatically if necessary, and the speed may be maintained constant within any desired range. While, as a general rule, in such factories it appears that the case for electricity is not strong enough to warrant any very great capital expenditure, with a view to direct economy in fuel, it by no means follows that there may not be exceptions to the rule. Such exceptions would probably be found in factories where the nature of the machinery and transmission is such that, after the best that gearing and straps can do has been done, there remains a loss between the prime mover and the producing machinery of more than 25 per cent., or in factories where the machinery is used in an intermittent manner, and where a saving could be made by stopping the shafting along with the machines. There are very many such cases.

Looking at the matter from the standpoint of comparing the best that can be done by shafting with the best that can be done with electric transmission, it may be taken that where there are more than five steps between the shaft and the prime mover and the point of final application of the power, it is possible to gain a higher efficiency by electric than by mechanical transmission. For example, starting from the engine shaft, a belt or rope is taken to a main shaft—step one; to a counter-shaft on another floor—step two; across a room—step three; to the machine countershaft—step four; to the machine itself—step five. The total loss in transmission under favorable circumstances would probably be not less than 5 per cent. for each step, or say 25 per cent. in all. The loss by electric transmission would certainly be reduced below this amount, and economy in working expense would result, even where the machinery is in constant use in both cases. Any irregularity in or interruption to the use of the power at the point of ap-

plication would tell in favor of electric transmission, because the loss is nearly proportional to the load in the electric, while in the mechanical transmission it is approximately constant and independent of the load. On the other hand, the capital loss of electrical transmission in factories of this class is usually greater than that of mechanical transmission. The problem of calculating for any special case is a comparatively simple one, because where the power is centralized it is not difficult to arrive at any required data for calculation. The power required is easily ascertained, and the loss in transmission is easily estimated. The best proof of the value of electric transmission in factories of this class is the fact that growing experience of its use is leading to its enormous extension, notwithstanding its greater first cost. The electrical engineer's best argument is appeal to experience of convenience, which cannot be directly valued in figures.

Group II. differs in many essential respects from Group I.

In nearly all such cases electric transmission compares favorably in first cost, and still more favorably in working cost, with any other system of transmission. Its only serious competitor in some cases is hydraulic transmission, and this generally is more of a useful coadjutor than a rival. In this group, however, the whole question of comparison bristles with difficulty. In the first place, it is extremely difficult to arrive at any approximation to accuracy in determining the amount of power actually required to perform the various operations usually performed by steam engines. As a general rule such factories as those instanced in Group II. use steam engines worked with low-pressure steam. These engines are rarely kept in perfect repair, and the indicator diagram gives little information as to the effective power. It is not usual to make provision for indicating such engines, and there are many gate-ways for the escape of heat. The best way to arrive at the actual power is to apply an electric motor to the work, and record the measurement of power thus obtained. While in many cases such results accord very closely with skilled guesses at the actual power, there are many surprising differences. Another very important element is the fact that in many such factories—for example, in paper mills, calico printfields, chemical works and dye houses—there is a large quantity of steam required for heating purposes, and this has a most important bearing on any proposal to substitute electric motors for the small steam engines. Not only does such substitution involve the use of a steam distribution independent of the power distribution, but it complicates the calculation of efficiency; because, in the case of a paper machine, for example, if the whole of the exhaust steam from the driving engine be used for heating the rolls, then the efficiency of the engine ceases to be of any importance whatever. The engine will exhibit its inefficiency by rejecting heat which is afterwards profitably utilized elsewhere. Hence arises the custom so puzzling to one

who wishes to compare the power efficiency of factories of different kinds, of checking the efficiency by equating the coal consumption to the output of the manufactured product. This after all is the real test as between one factory and another, but it altogether conceals the factors in the calculation which enable one to localize the losses. Even in the case where this complication of heating does not exist, there is usually in such factories so constant a variation of load that it is almost impossible to arrive at accurate data of the actual power used. Notwithstanding these difficulties, the case is so good for electric transmission of power, under such conditions, that it is not difficult to prove its superior economy in nearly every case falling under the description of Group II.

Even in cases where the whole of the exhaust steam is profitably used, and the efficiency of the engines themselves is of no importance, there is a serious loss of heat between the boiler and the engine. Every gallon of water sent to waste through the steam traps and drain cocks represents a pound of coal uselessly burnt. Even when the pipes are well covered and perfectly steam-tight this loss is considerable. Last year, in response to questions addressed to users of power in England, Scotland, and Ireland, the answers which have been compiled in tables, were obtained by the courtesy of about twenty out of one hundred factory owners. While, of course, it is impossible that these results as a whole can be quantitatively correct for scientific purposes, they possess a great value as a qualitative analysis of this important element of manufacturing cost. These tables show very clearly that in all cases where there are many small engines the cost of power is a maximum. There is a decided tendency to exaggerate the power of small engines, and if this be taken into consideration in addition to their well-known inefficiency, the result comes out much more seriously against them than is indicated by the figures in the tables.

(To be continued.)

CLOTHS REQUIRING UNEVEN LIFTS IN SHEDDING.

The production of some kinds of cloth ornamentation depends on the working of a number of threads which interweave in the same order when forming the body of the cloth. It will be evident that any figure on an extensive scale, which requires a number of figuring shafts, would of necessity create an unequal shedding plan, some lifts being very light while others are very heavy. The uneven lifting is noticeable in some patterns requiring a large number of shafts of healds. If the size of the spot was increased, or the spots placed farther asunder, the unevenness of lift would be increased. The fact that in double-lift dobby machines the descending healds or shed aid in pulling up the ascending healds is generally acknowledged, and where the number of healds raised for each shed are nearly equal, the working of the loom is regular. In accordance with the pegging plan given, the seven healds with

their springs will pull up the three healds and springs quite easily, but if the three are required to pull up the seven a jerking of the loom may be perceived, says a writer in the Textile Recorder. The jerking is caused by the extra power exerted in raising the seven healds without a similar counterbalancing pull. This inequality of lifting the healds is often demonstrated in designing, and deters the production of many good patterns, which are discarded rather than put the loom to the continued strain of weaving them. The same inconvenience is experienced when producing vestings or other goods woven on the double cloth principle, where the face warp and a portion of the back warp is lifted in order to put the weft into the back cloth. When the whole capacity of the dobby is not required for these cloths, some attempt to equalize the lift is often made by attaching the surplus jacks direct to strings, and lifting them up for those picks where very few healds are raised.

Positive shedding motions are not subject to this jerking, and are better adapted for this class of work than machines which require the aid of springs. Many attempts have been made to lessen the evil of non-positive shedding by relieving the spring of its full extension. Sufficient spring power is required to keep the healds to the bottom of the shed, and all further extension is better avoided, if possible. Spring relieving motions of the past have been made on the quadrant principle, or by the intervention of an eccentric, which is turned round to its least diameter as the heald rises, and thereby relieves the connecting band instead of extending the spring. A new plan, which is showing some signs of a more general introduction, is "Dawson and Lloyd's Patent." In using this method, when the shed is formed the spring is extended about half the distance of a direct spring; but its power on the heald is not increased in this ratio because of the decrease caused by its position on the lever. The springs in this motion are always acting on the healds to some extent, being in position to pull them down when fully extended. The difficulty with some quadrant motions is the tendency to pull against a dead centre when the heald is at its highest position. Some method of satisfactorily effecting the results which are claimed for this machine is required, not particularly as a saving of power in working the loom, which would not be a great matter where the even lifts were adhered to, but for increasing the scope of the dobby in cloths requiring uneven lifts, and also taking the strain from the healds, which will, doubtless, last much longer. Many manufacturers of fancy figured cloths do not provide healds which are knit according to the pattern of draft, but choice must be made from a variety of counts of evenly-knit healds. In these cases the threads do not go perfectly straight from front to back. Perhaps one stripe will be drawn on the back shafts, being one-quarter of an inch in the healds and one-eighth of an inch in the reed. The opening left in the front healds for these threads to pass through is practically nil, and the more rigid the healds

are held the greater will be the friction on the yarn when shedding.

Attempts have been made to relieve the healds of their rigidity in the ordinary dobby, and at the same time to avoid the objectionable jerking motion of the loom when not more than half the dobby capacity was required, by pegging the lattice which works the back jacks in the opposite manner from the front and connecting them by cords round pulleys to the bottom of the healds. The springs are dispensed with in this way, and a positive motion effected; but the liability of the looks to miss or catch incorrectly makes the method a practical failure, causing the cords to break or the sheds not to be formed. The spring-relieving motion is also arranged with one row of levers, and a suitable frame for securing it to the top rail of the loom, when it may be applied as a top motion for under tappets, or it may be used in connection with side tappets instead of top jacks, but this is of no advantage beyond allowing a dobby loom to use side tappets without removing the dobby in such cases as when sateens or similar work is more in demand than dobby-figured cloth, as appears to be the case at the present time.

SCOURING WOOL.

A point of special importance concerning the scouring of wool is the water to be used. Good machinery and soaps may be bought, but if the water is bad the results will be unsatisfactory. Some waters have to be distilled before they are suitable for washing wool, while other kinds need only softening, but in any case the water should be soft. The average mill has access to rain, river and well waters, but the principal source of these is rain. Rain water, from the absence of earthy salts, is very soft, and on that account is preferable to any hard water. Rain, after it reaches the earth, soaks down into it, and during its passage through various strata, dissolves certain salts, etc., the quantity and quality of which vary with the nature of the strata with which it comes in contact. River water usually contains from 10 to 25 grains of solid matter per imperial gallon of 70,000 grains. The quantity varies with the time of the year and the dryness of the season. But in any case soft water always gives the best results, and should be used in wool scouring, if at all procurable.

In considering the ingredients used in wool scouring, urine is often used. The urine is usually stale before using, and consequently contains not only ammonia, but a large amount of potash. The potash causes the whiteness, and the ammonia will saponify the animal grease, and when thrown into the scouring bath in a warm state the grease will easily wash off. The sheep feed upon vegetation which contains potash more or less, and that will be absorbed in the blood, and so reaches the wool upon the skin. The potash is a property which the wool necessarily contains. Potash is, therefore, required in some form or other to whiten the wool, and this is supplied in the soap.

It is a well-known fact that wool when growing is preserved by nature with an oily substance called "yolk," containing a large quantity of potash, and usually termed grease. The proportion of grease in unwashed wool varies from 60 to 70 per cent., which has to be removed before the wool fibers are ready for manufacture. In enabling the manufacturer, where scouring is attempted, to get the best possible results, I propose, says the Bradford correspondent of the *Indian Textile Journal*, to give the best method known in wool scouring so far as cleaning agents are concerned, so that the delicate fibers of the wool shall not be injured, and its natural brightness be left unimpaired.

The experience of woolen and worsted manufacturers whose products are standard in the trade, point to the fact that the best agent for scouring is a good potash soap, which, while leaving the actual weight of the real wool undiminished, gives a soft, silky handle obtained by no other treatment, and which is so much appreciated by wool buyers.

If soda soap is used in scouring, the wool, besides turning yellow, will become harsh and brittle; while, on the other hand, potash (which is natural to the wool) made with tallow into a neutral soap in the manner described further on, will be found to be the best in every way.

The materials and proportions for three tons of the best potash soap are as follows:

	£.	s.	d.
Half ton caustic potash at £25 per ton.....	12	10	0
Half ton soft water.....	0	0	0
Two tons tallow at £20 per ton (English price).....	40	0	0
	—	—	—
Total cost	52	10	0

Costing £17 10s. per ton, or 17½d. per pound.

To make the finest potash soap for wool scouring, washing woolen flannel goods, etc., take 20 pounds of caustic potash, and put the contents into an iron or earthenware vessel with an equal quantity (20 pounds) of water; as the potash dissolves, the mixture (or lye as it is called) will become heated, but it must not be used until it has become only warm, or about 90 degrees F. In a sufficiently large iron pan, melt 80 pounds of tallow free from salt until the whole is liquid; the heat of this, though warmer than the lye, must only be about 120 degrees F. Now pour the potash lye in a gentle stream into the melted tallow (not the tallow into the lye), stirring it with a wooden stirrer all the time, and continue to stir until the whole appears to be perfectly smooth and combined, which will be in a few minutes. This mixing may either be done in the melting pan after withdrawing the fire, or in a wooden barrel, as may be convenient. Now pour the mixture into any suitable square box, lining it with damp calico to prevent it sticking to the sides; wrap the box up with flannel, sheepskins or something of a warm nature to retain the heat, and put it in a warm place for a week (during this time a chemical reaction takes place, re-

sulting in its slowly changing into 120 pounds of the best hard potash soap); after this it may be cut into bars, and though ready for use it has the merit of improving the longer it is kept.

A method of wool washing which is coming into use in Germany is that by means of water glass (silicate of soda), which is rapidly taking the place of the old method. The greasy wool is placed in a large receptacle containing water rendered slightly alkaline. This fluid is either a mixture of soft water and urine or a solution of white curd soap in soft water of a diluted solution of soda ash. The scoured wool is withdrawn and put into a receptacle with clear water, in which it is rinsed until the wash water escapes clear. After the wool has been washed it must be whizzed and dried in a place shaded from the sunlight, which has a tendency to turn the material sometimes yellow. In the water-glass process care must be taken not to have the temperature either of the water or of the water-glass higher than that of the soap and soda bath. When washing in the "Leviathan," add water-glass only, but no soda or soap to the first bath in which the wool is steeped. Into the second bath put one-half soda and one-half water-glass. It is advisable to previously squeeze out the liquor before the wool is treated cold in the washing machine, because by keeping this wash liquid warm it can be used twice as long as soda or soap liquor. Wool washed with water-glass always appears whiter and more open than with the ordinary process. It is also softer to the feel when it is squeezed out well before being washed cold.

The following method is also very popular in German mills: The wool is steeped in a receptacle provided with two compartments. When one portion of the wool has been steeped sufficiently (often three hours), it is placed in the washing machine and passed through two compartments filled with water of a successively higher temperature until the wool reaches another receptacle filled with cold water, in which it is rinsed. When rinsed clean, the wool is caught up by an apparatus raising it from the water, and it is passed between two rollers which squeeze out the water. It is then often taken and whizzed in a hydro-extractor and finally dried in a strongly-heated and well-ventilated room or chamber.

—The number of sheep in the Province of Ontario sold or slaughtered according to the report of the Department of Agriculture was in 1897, 732,872; and in 1896, 766,896; the wool clip in 1897 was 5,139,984 pounds as compared with 5,581,387 pounds in 1896. In Manitoba the number of sheep, from the assessment roll, was 36,680 in 1897 and 33,812 in 1896. The number of sheep in the United States is not at present increasing. In 1893 there were in the United States 47,273,553 sheep valued at \$125,909,264; in 1895 there were 42,294,064 sheep valued at \$66,625,767; and in 1898 there were estimated to be 37,656,960 sheep valued at \$92,721,133.

FLAX CULTURE AND THE MANUFACTURE OF LINENS TO TAKE THE PLACE OF COARSER COTTONS IN NEW ENGLAND.*

It may be of interest to refer briefly to the history of the flax industry in this country. The art of raising flax and spinning it by hand was brought to this country by the earliest colonists. In 1629 the English Parliament directed that flax should be cultivated for fiber in Massachusetts. As early as 1648 the plant was cultivated in Virginia by Captain Matthews. Almost every housewife in the colonies wove linens by hand. In 1790 the Secretary of the Treasury reported that the manufacture of linen goods in a household way had become an established industry. It will be remembered, in this same year (1790), the first cotton mill was inspected by George Washington. Thus linen manufacture antedates that of cotton in this country by nearly 150 years. It may be said, in reply to this statement, that the linen industry was of little consequence at this early date. But thirty years before the erection of the first cotton mill, Massachusetts and Rhode Island in a single year reported nearly 30,000 yards of linen fabrics made in families. All the records in New England show a disposition to encourage the growth and manufacture of flax. A half century before the manufacture of cotton, Pennsylvania, Rhode Island, and New York also offered special inducements for the manufacture of certain kinds of linen goods. In 1810, over 20,000,000 yards of linen fabrics were made in this country in families. In addition to this, nearly 25,000,000 yards of linens of coarser quality were made. Water and steam power as well as labor-saving machinery had been introduced previous to this, which resulted in a considerable extension of the industry. But it was still largely a wholesale industry. The following statistics, taken from report No. 9 of "The Fiber Investigations of the United States Department of Agriculture," by Mr. Charles Richards Dodge, special agent of the Government, will be of interest. In 1849, 562,312 bushels of flax seed were harvested in the United States, and 7,709,676 lbs. of fiber were produced. In 1859, 566,867 bushels of seed were harvested, and 4,725,145 lbs. of fiber produced. In 1869, the production of seed had risen to 1,730,444 bushels, while the fiber in this year rose to the phenomenal total of 27,133,034 lbs., an amount never approached since. In 1879, the production of seed was nearly four times the quantity for the year 1869, while the production of fiber fell to the comparatively insignificant quantity of 1,665,546 lbs. In 1889, 12,250,410 bushels of seed were harvested. The production of fiber had fallen steadily during this period, until it reached 241,389 lbs. in that year.

The reason for the falling off in the production of fiber since 1869, while the acreage of flax and the production of seed were rapidly increasing, is not far to seek.

The impetus given to cotton manufacturing by the invention of the cotton gin and subsequent mechanical improvements, soon brought down the price of cotton fabrics through the sharp competition among manufacturers which followed on the rapid expansion of the industry. Little by little the cheaper cottons have found their way into the homes, silencing the spinning wheels and almost all the looms engaged in the manufacture of finer linens. In spite of the decline of the linen industry the culture of flax has steadily increased in this country. At the present time it is grown almost exclusively for seed. The straw is of no value except in making certain coarse qualities of bagging and of paper. Since 1889 the acreage of flax sown has fluctuated somewhat. This is due, doubtless, to fluctuation in the price of flaxseed oil and flaxseed cake during this period. The acreage sown has been affected somewhat, no doubt, by the very general impression that flax is an exhausting crop. At the present time the annual production of flax seed and straw is approximately 12,000,000 bushels of seed and 300,000 tons of fiber. It is doubtful, however, if our farmers can continue to grow flax indefinitely for the seed alone. Unless some use can be made of the fiber this great agricultural industry will doubtless suffer a considerable decline during the next decade. Is it not possible that the manufacturers of this country may prevent this decline? Manifestly, the surest and easiest way to do this is to find some use for this nearly half a million tons of flax straw produced annually in this country.

Let us, then, ask and attempt to answer two important questions about this matter. First, if the use of this enormous quantity of flax-fiber is possible to us, will it pay? Second, what considerations enter into the production of flax in this country that favor the use of the fiber in the manufacture of linen goods? First, then, will the manufacture of linen goods pay? It is conceded that next to cotton, flax is the most useful and valuable of all commercial fiber. It was thought at one time that cotton goods, on account of improved methods of manufacture, might eventually almost entirely take the place of linen goods. But plainly, this is not to be. More and more flax is coming to be again what it was from the time of the earliest Pharaohs of Egypt, to the beginning of the present century, the fiber of luxury, while cotton fiber is taking its place as the fiber of the masses. We are importing annually from foreign countries over \$30,000,000 worth of linens—more than one-tenth of our total output of manufactured cottons. It has been estimated that the world's consumption of linen goods is not far from one-third the consumption of cotton goods in money valuation. It must be evident that any country that pretends to lead in the manufactures of the world can ill afford to have no part in this important branch of human industry. One need only to visit the great centres of linen manufacturing in Ireland and on the Continent to be convinced that next to the manufacture of cotton goods

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this is the most remunerative of the fiber industries. A study of the comparative consumption of linens and cottons shows that with the steady rise in the standard of living of the masses in civilized countries, the percentage of linen goods used is steadily increasing. To one in possession of the facts about this great industry, and especially about its early establishment in this country, it must be a matter of great surprise that this enterprising nation has allowed this industry to slip from its control.

Charles Richards Dodge, one of whose reports was referred to earlier in this paper, has urged upon our Government and upon our manufacturers the great importance of the reinstatement of linen manufacturing on a large scale into this country. He has expressed the opinion that if we go about the matter intelligently, moving only so fast and so far as we can see our way clearly, the industry may come in a few years to rank among the first in the country. He has made a most careful and exhaustive study of flax culture and the manufacture of linens in Ireland, in Belgium, in Russia, and elsewhere upon the Continent, and is prepared to speak with authority. For nearly ten years he has been the special agent of the Department of Agriculture in their investigations into the culture and manufacture of fibers and fiber fabrics. He has repeatedly urged in the United States and abroad, that it would be profitable for the United States to engage largely in the manufacture of linen goods. We come now to our second question, what conditions or considerations enter into the production of flax in this country that are favorable to the use of fiber for the manufacture of linen goods? Certain agricultural conditions have been referred to briefly. The most important of these is the cheapness of lands compared with values in Ireland and on the Continent, where flax is now most largely produced. Next to this in importance is the greater native fertility of our soils. A yet further condition in our favor, especially in New England, is the fact that thousands of our best farms have been abandoned and ten thousands of acres of land, of much higher native fertility than those under cultivation in Europe, now lie in idleness or practically so. These conditions, joined with the proverbial skill and enterprise of the American farmers, should give us a decided advantage in this enterprise over European competitors. We need only learn their methods of close and intense farming to surpass them easily in the growth of flax; at least to the extent of providing fiber for the production of linen fabrics for home consumption. During the last few years the United States Department of Agriculture, through the various state experiment stations, has made extensive experiments in the growth of flax, and these experiments have demonstrated that flax can be successfully grown for fiber in almost all the states in the Northern half of the United States. During this period of investigation, and for many years previous, sufficient

flax had been grown in certain parts of this section of our country to furnish fiber for the manufacture of very much more linen goods than were consumed in our country during the period in question. To be sure, the flax grown has not been of the kind that yields the finer fibers, but the experiments of the Department of Agriculture have shown that the variety of flax producing the finer fibers can be successfully produced over the whole flax-producing area mentioned above. So far then, as purely agricultural conditions are concerned, the United States has many and important advantages over other countries now producing flax for fiber. It would seem that all that is needed to introduce the cultivation of flax into this country on an extensive scale is the producing of a market for the fiber.

(To be Continued.)

CANADA AND THE UNITED STATES IN TRADE.

The approaching conference of international commissioners at Quebec is attracting more attention to this country on the part of the people of the United States than anything that has occurred for years. The American Government has busied itself lately in attempting to gain special trade privileges for American manufactures in foreign countries. The South American Republics have been visited by commissions and encouraged to send representatives back to the United States. Efforts have been made to increase exports to Europe, Australia and the Orient. But while all the successes in these directions have been loudly heralded, one of the most satisfactory foreign trades a nation could wish for has been carried on with Canada. According to the United States Bureau of Statistics Canada's imports from the United States in the five years from 1893 to 1897 were 50.9 per cent. of all she imported; from Great Britain, 31.2 per cent. Exports to the United States were 35.3 per cent., and to Great Britain, 55.6 per cent. Of her total foreign trade in the period mentioned, 42.8 per cent. was with the United States and 43.9 per cent. with Great Britain. The Dominion collected annually on the average \$7,481,898 of duties on goods from the United States and \$7,663,030 from Great Britain. There is little we can blame the American Government with in their treatment of Canada. They have proceeded entirely upon business principles, and were not disposed to offer Canadians any special inducements in their markets so long as we were willing to buy American products without them. Congress was quite willing to let well enough alone and give its attention to other countries. When the idea of a British preference was proposed matters assumed a different aspect. Although it yet remains to be seen what effect the deduction of 25 per cent. off the schedule of duties in favor of British goods may have upon United States trade with Canada, it was evident that the Canadian Government was about to assume a new attitude in its international relations, and a new policy might have to be adopted to meet it.

The exact relative importance of Great Britain and the United States as exporters of textiles to Canada is so little understood that we append a statement showing the description and value of the dry goods imported into the Dominion of Canada from Great Britain and the United States, together with the amounts of customs duties collected thereon respectively during the fiscal year ended June 30, 1897, compiled from the Dominion trade and navigation returns:

Description of merchandise—m'f'rs.	Great Britain.	
	Value.	Duty.
Dry goods—woolens	\$5,576,859	\$1,771,041
Cottons	2,693,114	766,439
Silk	1,396,015	425,220
Linen and jute.....	1,158,809	262,672
Hats, caps, gloves and furs.....	1,108,493	316,384
Gutta percha and India rubber.....	191,520	48,411
Miscellaneous and fancy.....	1,694,570	508,362
All kinds, free of duty.....	764,482
Totals.....	\$14,583,862	\$4,098,529

Description of merchandise—m'f'rs.	United States.	
	Value.	Duty.
Dry goods—Woolens.....	\$218,396	\$68,073
Cottons	1,119,147	324,726
Silk	150,774	45,504
Linen and jute.....	55,042	12,022
Hats, caps, gloves and furs.....	539,352	158,258
Gutta percha and India rubber.....	1,401,103	289,394
Miscellaneous and fancy.....	541,112	155,579
All kinds, free of duty.....	566,530
Totals.....	\$4,591,356	\$1,053,556

Cotton goods are the only staple dry goods which we import in quantity from the United States, if we omit from the list gutta percha and India rubber, which should scarcely be included in it, and of these, in spite of the great advantage in raw materials, American manufacturers sell in Canada less than half as much as their British competitors. Our imports of American woolens and linen are insignificant, and while imports of silks, hats and caps are relatively much more important, the trade is not of large dimensions. It is worthy of note that while Great Britain pays four million dollars to the Dominion treasury in duties and the United States one million dollars, from the former country \$764,482 worth of goods was entered free of duty, while goods to the value of \$566,530 were entered by the United States.

WORSTED SPINNING.*

BY M. M. BUCKLEY.

(Lecturer in Wool and Worsted Spinning at Halifax, Wakefield, and Elland Technical Schools).

The Holden system of combing approaches more closely to the ideal treatment than the Noble, though by many combers it is held that the fibers are dealt with too harshly. The circle is made with two or three rows of pins that on the outside are much more finely set than the others, in order to arrest the small neps and impurities as the combed fibers are drawn off. As in other machines,

the circle rests upon a steamchest to facilitate the working of the wool. This seems to be a fundamental necessity for successful combing, since as the fibers get heated they lose their cohesiveness and repel each other, thus lying more lightly in the pins, from which they may be removed in a much cleaner condition, with less injury to their surface.

The partially combed wool, as it is carried forward by the revolving circle, next comes to the square motion, one of the chief features of the machine. This consists of a series of fallers accurately curved so as to correspond exactly with the periphery of the circle, which works in conjunction with a double pressing plate to hold the wool in the pins of the circle. The requirements of the motion are to thoroughly comb and clear as much as possible of the projecting fringe; consequently the pins are set very fine, and in order to ensure their proper penetration a rocking brush is used to assist their action.

Like the circle, the fallers are heated as hot as possible by means of two steamchests placed respectively under the upper and lower races. They work in frames, and by a combination of slides, levers and eccentrics, are pushed very quickly away from the circle. A motion of this description is necessary, because if any lingering takes place owing to the movement of the circle, the arrangement of the fibers will be disturbed, and have a tendency to cross each other instead of remaining parallel. To prevent the fallers carrying away the long fibers, and also to enable the neps, etc., to be removed, the double-flanged press-plate works upon each side of the front row of pins, and is pressed tightly against the brass foundation by a tappet or eccentric motion. If it was stationary it would have a tendency to cut the fibers as they were drawn under it, so it is made to travel with the circle for a short distance.

The fallers of the square motion are made as narrow as possible, so as to enable them to get close to the circle. It will be seen, however, that a small portion of the fibers still remain uncombed between the circle and the first faller, somewhat similar to what occurs in the Noble comb between the circles. Here, however, means are provided for effectively dealing with it, so that the fiber is combed throughout its length. Passing forward to the drawing-off roller, here a series of short intersecting combs are employed, the pins of which all point downwards. They run for about three parts the distance round the circle upon an elevated slide, and as they approach the drawing-off rollers they descend an incline, so that the pins are placed between the circle and the rollers. The wool which is now lying in the bottom of the circle is pushed up into the pins of the intersecting comb, through which it is pulled as it is being drawn off. After passing the rollers, the intersecting comb rises on to the elevated slide, which also possesses a steamchest, and passes round the comb until its turn comes to descend again.

The chief objection against the square motion comb is the multiplicity of complicated motions which are necessary, and which are continually requiring attention and repair, necessitating both loss of time and expense. There

*Republished from the Textile Manufacturer.

is every indication that it is being gradually supplanted by the more useful Noble's comb, even in the sheds of those who have been its greatest supporters. It is practically only suitable for one class of wool, its application being thereby limited, whereas the Noble comb can be used for all varieties of wool, both long and short, while in addition it is more easy to manage and costs less for repairs.

Another comb which must be mentioned is that of Little and Eastwood, made by Messrs. Platt Brothers. Like the previous machine, it is only capable of dealing with short-fibered wools. In this case the uncombed wool is made up into rolls or balls, three of these being placed upon a traveling lattice. The ends of the bobbin are held in slots, so that the slivers are gradually unwound by the motion of the apron, and then pass through the feed rollers and into the fallers, which are curved so as to correspond with the nips and periphery of the circle. The nips, usually about six in number, are arranged circularly around a barrel. Then the feed rollers, fallers and nips are all placed inside the circle, and as the tuft is brought forward and seized by the jaws the delivery head recedes, thus drawing the fibers through the pins, the noil, etc., being in the nip. As the barrel revolves the fibers are placed in the circle (which only has two rows of pins), the combed portion on the outside. These are drawn off by the rollers and pass into the can. Precisely the same objections apply to this machine as those we have noted with regard to the Holden.

The combed slivers are put through two or three gill boxes, termed finishers, in order to secure a thorough mixing of the fibers, and also to obtain a regular end of definite weight. A large number of doublings are therefore given at the first machine, which is used for a weigh box as well. The baller is the last of the series, and here, by a similar arrangement to that described in connection with the carder, the ball or top is made. At this box the wool is generally conditioned—*i.e.*, supplied with the requisite quantity of moisture to impart the natural cohesiveness and elasticity which are essential for successful manipulation. Owing to the great difference which exists in the capacity of the various wools for absorbing and retaining moisture, and the tendency which is sometimes manifested to get as much as is conveniently possible without detection into the wool, it has become necessary to adopt a standard allowance as well as a recognized method of testing, so that the nature of transactions may be ascertained.

The standard allowance and regain per cent. are as follows:—

Tops combed with oil for moisture, 2 ozs. 9 drs. per lb., or a regain of 19 per cent.

Tops combed without oil for moisture, 2 ozs. 7½ drs. per lb., or a regain of 18¼ per cent.

Noils for moisture, 1 oz. 15½ drs., or a regain of 14 per cent.

Under these circumstances it is necessary that the spinner should be able to ascertain for himself in what condition the tops are which he buys, especially seeing that the apparatus required for making safe and reliable tests is simple and inexpensive. It consists of a pair of

scales, accurately adjusted so as to turn readily with one-tenth of a dram, for weighing the samples; a reel for tops, which may also be used for yarns; an oven of cylindrical shape, constructed with an inner and outer case, a convenient size being 40 inches high and 30 inches diameter outside measurement. A space of 1½ inches is allowed between the two cases to allow the heated air to circulate freely all round.

Several systems have been devised for ensuring an equal degree of heat in all parts of the oven; but the one introduced by Mr. W. Townend, manager of the Bradford Conditioning House, is the best, securing this essential feature at a small cost, and which, moreover, reduces the time necessary to make a test to nearly one-half of that required by other ovens. In this a pair of scales, adjusted to turn at one-tenth of a dram, are fixed firmly to the oven in such a position that one extreme end of the beam is exactly over the centre of the oven. From this is suspended the reel containing the sample, the reel corresponding in weight with the pan and chains at the other end of the beam. A thermometer is also used, ranging from 10 to 400° F., the bulb of which descends half-way down the oven; and a Bunsen's gas burner, burning 75 per cent. of air and lighting eighty jets, is arranged in a circle underneath the inner case.

With the above anyone can readily list tops to ascertain that they are right, but care must be taken to obtain a representative series of samples and results. The following points should be observed. The oven must be heated up to 220° F., or taking the extremes of 212 to 230° F., any lower degree will not abstract all the moisture, and any higher will discolor the sample, owing to its beginning to decompose, while some of the water which enters into the composition of the fiber is liberated, so that the results are not reliable.

In dealing with tops, the samples must be drawn from the middle and the outside and weighed immediately, great care being taken to have the exact weight required and perfectly balanced. The top sample is then wound round the reel and put in the oven suspended to the scale. No specific time is fixed, nor can be fixed, for expelling all the moisture, as the different qualities, age and condition of tops materially affect the time required. Absolutely dry weight is only obtained when the sample in the heated oven ceases to lose weight, and the needle of the scale, after balancing, remains stationary for, say, five minutes. There is a small cup above the rod of the reel, near the end of the scale, upon which the small weights are put, representing the loss of weight caused by the drying process, and the original weight of the sample is thus left in the pan at the opposite end of the scale. The small weights representing the exact loss of moisture are read off, and, by referring to the "table of results," the percentage of dry weight and of the loss in moisture is

Elaborate experiments extending over many years, and the experience of practical men, have shown that textile goods in an absolutely dry state will regain on exposure to the open air or in a warehouse a certain per-

centage of moisture, and these regains have been fixed and acknowledged as "official standard allowances" for moisture. Thus if a top loses in moisture 2 ozs. 9 drs. per lb., there remains 13 ozs. 7 drs. of dry top—that is to say, 16 per cent. direct loss of moisture and 84 per cent. of top. Then, if the standard allowance of regain is 19 per cent., the amount of 19 per cent. of 84 is 15.96, and this is added to the dry weight, giving a total of 99.96 per cent. (practically 100), so that this particular top would be proved to be up to the standard, and show no appreciable loss or gain at 2 ozs. 9 drs. per lb. For the above information, in order that it should be reliable, I am indebted to Mr. W. Townsend for his courtesy and kindness in allowing me to make extracts from his "Official Results."

In addition to water, some top makers and merchants endeavor to gain an advantage by saturating the wool with mineral salts, sugar of lead being the one mostly used. It may be readily detected by first washing the wool and then adding hydrochloric acid to the solution, which produces a dense white precipitate.

The tops are bought and sold just as other commercial commodities, their price being influenced by the laws of supply and demand. Their making is really a part of the spinning industry which has been separated and specialized. It has called into existence a large number of commission combers, who merely cleanse and comb the wool for the merchants. The tops are graded according to the fineness of the fiber, and are known as 60's, 70's, 50's, 32's, etc., representing the spinning qualities of the wool. They vary in price according to the degree in which they manifest certain essential features. A primary consideration, so far as the spinner is concerned, is the fineness of the hair; and other things being equal, those tops with the finest fibers are the most valuable. This determines the extent to which it can be spun, and in addition produces a stronger yarn, because we get considerably more fibers in cross section, and consequently the strain which is placed on the yarn is distributed over a greater number of points. Further, since the successful drawing and spinning of the tops is determined by the surface resistance exercised by the wool as it is being drafted, it follows that the greater the number of fibers present the more will they hold each other, and so prevent irregular places. Careful observations and records should be kept of the behavior of the tops and the results obtained, because it is found that in some cases what appears to be a good top works up rough as it is gradually reduced in thickness, and the yarn "stares" too much—that is, it presents a rough, wild appearance owing to the large numbers of free ends of fibers which project, and consequently reduces its value. In conjunction with fineness, length is another essential requirement. The importance of this will be readily understood when it is borne in mind that at every process a certain amount of breakage takes place. Proof of this is easily seen in the amount of short fibers which are thrown off at each operation. During combing the short is removed and forms the noi, but we always find that the rubbers and brushes collect a considerable quantity in the after-processes. Probably much of this arises through the

rollers not being properly set, or the ends having too much twine in; but still, most of it is the result of the continuous drafting and doubling which is adopted, together with the great pressure to which the fibers are subject in passing through the drafting rollers. It follows, therefore, that the longer the top is to begin with, allowing for the breakage, the fibers available for building the yarn will be more suitable, since the longer the wool the stronger the yarn will be. That this is so may be easily proved by testing the breaking strain of two yarns, one made from a short top and the other from a longer, in each case putting in the same number of turns. The greater the number of times a fiber is twisted around the others, the more force it requires to withdraw it. Another factor to be considered is the amount of sinkage which takes place in passing through the drawing. Where a large proportion of short is present, it is continually thrown out as it leaves the nip of the front rollers and collects upon the wings of the flyers and different parts of the boxes. Extreme lengths must be avoided in one top, since better results can always be obtained by a judicious system of blending.

(To be continued.)

SCOURING.

Having woven the goods, we are ready to scour, piece, dye, full, gig, shear and finish them. These operations must be taken separately. Scouring is the first; and before wetting the goods, they are perched. The inspector will do this, and he will detect imperfections, mark them and dictate what line of work is necessary to prepare the goods for washing. The treatment of cloth containing an undesirable proportion of shives, or burrs, usually consists in removing the latter with burling irons. Some pieces may contain so many specks of a vegetable nature that it will be best to carbonize the goods in a bath of sulphuric acid 4 degrees strength, and dry in a hot room at 240 degrees, then run dry in a heated fulling mill. The vegetable matter will come out, except such as may be inside the body of the cloth. Any attempt to brush out pieces of foreign, beyond a certain point, would inevitably spoil the main bulk of material and lower its value, says a writer in *The American Wool and Cotton Reporter*. The severe treatment necessary would tend to tear the fiber. A good deal, however, depends on the nature of the shives. Short, chippy pieces will remove far more readily than longer, slender fibers, and it is probable that under certain conditions, an arrangement for a preliminary separation of coarse stuff by brushing might be of some service.

Holes, tears, etc., in the cloth must be closed up. Use thread of same color as the goods. It is necessary to start the thread at least three-eighths of an inch back of the hole, so that it will have a good purchase in the original fabric, and will consequently be less liable to pull through, inasmuch as if the sewer takes her stitch about one-eighth of an inch from the hole the strain under the fulling pressure is very apt to pull through, and then the repair would not hold any great length of time. Be sure that the threads of the patch are directly in the centre of the hole, so as to insure the hole and stitches being properly and evenly covered on the inside; press it down firmly with the fingers. A hole caused by the goods having caught on a nail, or by being cut, cannot be sewed up. Such holes are marked with a red tape and the goods are passed with the understanding that there is an imperfection in them.

Wool in its natural state is impregnated with a fatty matter called "suint" or "yolk," M. Chevreul gives the following as the average:

Suam	32.74
Earthly matters	26.00
Greasy matters	8.57
Earthly matters fixed by grease	1.46
Clean wool	31.23
	<hr/> 100.00

When the goods get as far along as the scouring process, all but the residue of the above matters is removed. In their place are oils used during the carding, loose dyestuffs, and general collections of dirt and dust from the machinery. These impurities must be washed out. The requirements are a good machine, proper soaps and water. The modern patterns of scouring machines are as near perfect as one could desire. The trouble is that they are not always managed right. In one case that came to the writer's notice, oil spots were thrown upon the goods from a loose pulley which had been put up by the mill machinist. It requires but very little oil to keep a loose pulley lubricated if the lubricant is properly applied. In the present instance, the oil was not properly applied and the spotting of the goods was blamed to the scouring machine. We fixed this by first drilling a $\frac{1}{2}$ -inch hole in the end of shaft, two-thirds of the way through the loose pulley. Then the centre of the pulley was marked on the shaft, and a 3-16-inch hole was drilled clear through, at right angles to each other. This made four openings from the oil chamber to the surface of the shaft. Then we took some candle wick and doubled it until the thickness required to fill the 3-16-inch hole tight was obtained, pulled through and pared off flush on the outside of shaft. This conducts the oil to the surface of shaft sufficiently to lubricate the loose pulley, and at the same time prevent the oil from leaking out and spotting the goods. If the hub of the pulley should exceed eight inches, three or four holes may be drilled through the shaft. The end of the shaft should be tapped for a $\frac{1}{4}$ -inch street "L," which makes it very convenient for filling with oil. A good quality of oil should be used and the plug screwed in tight to prevent any leakage. A loose pulley fitted up in this manner, will run for a week without refilling.

Hard water, if used for scouring, tends to decompose the soap and cause the formation of lime and magnesia soaps which are deposited upon the texture of the goods nearly insoluble and give it a rough feeling. We always wash off our piece-dyed cloth in Fuller's earth with a little ammonia; that clears up the color, softens the goods and washes out all the loose dyestuff. While it is unnecessary to bestow as much care upon this class as would be necessary on close-finished goods, still they require a pretty thorough treatment. If a comparatively small quantity of water is required, it is recommended for the production of a soft touch, that condensed water be used for scouring. In some factories it is customary to filter the scouring water. In the filter apparatus the unfiltered water enters through a valve and pipe in the centre, passes up into a filter tank, then percolates downward through a filter bed of sand, passing up through a pipe. When the bed becomes choked with dirt, it is cleaned.

Smutting can be caused by the very smallest amount of alumina, in fact even the very thinnest covering of the solution which is left on the goods will produce the above defect. Streaks, stains, etc., are caused by the goods getting in contact with the rolls in such a way that the cloth is not evenly scoured. Doubling up, knotting and twisting are among these troubles. If the goods are guided through eyes, and if these are splintered, set uneven, crossed, or are out of position, there will be irregularities produced in the cloth, such as off colors, shaded places, clouds, etc. Uneven ruts or worn grooves in the rollers, dirty suds, soiled liquors, greasy sides, etc., will also cause defects. If slatty places show, they are probably due to uneven weaving. There is no handier way to increase the ease

of weaving and to lengthen the amount of cloth that can be done in a given time, than by tampering with the number of picks. Where this cannot be done all through a cut, it can sometimes be worked in here and there through a cut, and these heavy and light places show in the form of slats at the scouring.

A prolific source of poor scouring is due to cheap and inferior soaps. The cheap soaps will grease the goods, make the colors run, hurt the fiber, and be productive of other imperfect work. The suds will fall back upon the goods and stain them. For the determination of the quantity of fatty acids in soaps, take four grammes of the soap, weigh this out and dissolve in hot water, and when the limpid solution is obtained it should be decomposed with dilute sulphuric acid. The whole is then washed in a funnel with hot water. The fatty acid remains in the funnel. On cooling, the fatty acids are gathered by means of ether. The watery parts are then separated, and the fatty acids already dissolved in ether are washed with water. This solution is evaporated and the residue weighed. This residue represents the quantity of fatty acids in the soaps.

It is essential that an effective system of steam heating be used for heating the scouring liquor. There are three systems in use. These are the overhead system, in which the main flow pipe is carried to the highest point first and divided into several drop lines for the various machines which require steam. The second is the one pipe main system, which consists of a single continuous main, from which are taken both the feed and return to the coils in the department. The third is the two-pipe main rising system, which consists of flow and return mains (which are duplicates of one another) and from them are taken the feed and return to each coil. The drop or overhead system is specially adapted to departments in which are several machines using steam. The one-pipe main system, as a rule, is best used when few machines are operated. A good installation of piping should not be spoiled by giving opportunity for water to collect in depressions, and thus trap the steam which should flow through the pipe. See that the globe valves are not so placed that they trap the pipes. A globe valve right side up must necessarily form a trap to a certain extent. Turn the valve on its side and the trapping is done away with. Also see that there are openings for cleaning and blowing off the connections, and that valves are provided to control such openings. There is no other way to get good, clear steam service. A defective steam supply will spoil cloth by the yard, as all finishers know.

We dwell on this subject of piping for water and steam because the same regulations are applicable to the dyeing, fulling and steam finishing departments. In the present day with all the appliances there are at hand it is not necessary to erect an unsightly apparatus such as is the case if big cast-iron pipes are used, and long coils run from room to room, making great ugly holes in the wall between each room. With the use of small wrought iron pipe, small and good appearing union valves, and union elbows, neat air valves and carefully arranged main risers, etc., etc., a very neat system for both water, steam and heating can be placed in any mill.

The water supply for scouring, etc., is handiest if the feed pipe is placed as near on the water line as possible, and all the length of pipe possible inside. A stop valve should be put in the feed pipe as close to the tank as it can be located, and then a check valve, and another stop valve. The former valve may only be used when necessary to open the check, the other stop valve being used for the ordinary stopping of the feed water. With waters charged with mineral impurities there is a loss occasioned by the frequent blowing out which is necessary. The loss is further accentuated when oil or grease is present in the water, as these, combined with the particles of lime in suspension, still further interfere with the free passage of the

water currents. The thickening of the water is due to the particles of precipitated lime suspended in it, regarding circulation and interfering with the scouring operation. When the water is pure and soft, the process of scouring is not only made much easier and more effective, but less water and fewer soaps are required. Some waters leave the goods harsh and yellow, which makes the dyeing of bright colors difficult and adds to the difficulties in the dyehouse, which is the next department we will describe.

Foreign Textile Centres

MANCHESTER.—In the cotton trade the general feeling is that we are in for a season of comparatively low prices. Buyers of grays and other staples are not disposed to operate ahead, satisfied, apparently, that there is no risk of a serious upward movement. Yarn cannot be dear, seeing that so many new mills are about to be constructed, with no corresponding increase in weaving capacity. There are five spinning mills almost completed, and several projected, the total representing over a million spindles. It is a bad thing for the spinning industry that so many new projects are on foot, as it will be impossible to maintain the profits now earned for any length of time. The mill floater, however, does not care about that, and the machinery maker helps him a good deal. The cotton industry in many cases furnishes examples of the ticd-house system as far as machinery is concerned. The evil exists also in the wholesale drapery trade, although in response to a question of mine the other day the assertion was made by a high authority that the practice is not now so common as previously. I very much doubt whether the statement is correct, for it is about as difficult to get rid of the evil, once established, as to rid one's garden of convolvulus—known in some districts as the "Knutsford devil." The favorable report of the Agricultural Bureau is taken to indicate the possibilities of a large yield, and careful operators are deterred from committing themselves owing to the nature of the outlook. The result is that the market generally has been depressed to an extent not really indicative of the actual state of business. The demand from Calcutta has improved during the past few days, heavier shipments going out by the Clyde and Mersey boats. A few looms are waiting for warps in the Burnley district, but their proportion to the total is certainly not large.

LEEDS.—In Leeds, although the summer season's trade has kept on fully as late in the year as usual, some of the factories are now getting quieter, as the winter season's business has not, so far, opened out well. The stocks in the hands of retailers, left over on account of the mildness of the last winter season, were larger than usual, and so the orders given to travelers on their first journey are correspondingly small. However, a short spell of cold weather in the autumn would soon improve matters. In the heavy woolen districts the state of trade is still generally unsatisfactory, and only a very few firms are well supplied with orders, and it is reported that one old-established firm are about to permanently close their works. In the Morley district, where special attention is given to the production of cheap light-weight cloths for ladies' wear, those makers who have adhered solely to the production of the old-fashioned Melton cloths are quiet, but a few makers who have introduced more up-to-date costume cloths are very well employed.

HUDDERSFIELD.—In Huddersfield there is still a very good demand for the best class of fancy woolens and worsteds, and the leading firms in this trade are very busy. There is also an improved demand for cheap medium-weight vicunas, principally in blacks, which are being used largely, both for ladies' wear and in the clothing trade.

BRADFORD.—From the beginning of the colonial wool sales in London to the conclusion the improved prices of merino wools have been fully sustained, and the competition from all sections of buyers has been extremely keen. Although this demand for fine colonial wools can, to a large extent, be accounted for from the shortage in the supply arising from the poor clip, and the discontinuance on the part of many of the Australian flockmasters to pay the same amount of attention to the growing of fine merinos, there is also distinctly discernible in all manufacturing centres a tendency in the direction of the greater use of plain dress fabrics of a soft fine texture which can only be produced from these fine merino wools. Given, therefore, a smaller supply and an improving demand, the improvement in price was a natural consequence, and there is every reason to expect that this hardening tendency will continue quite up to the end of the year. Although consumers in Bradford have been somewhat slow to follow this upward movement in London, they are, from the conditions of the situation, being gradually forced to accept the higher level of prices established at the sales, and topmakers and spinners are insisting on revised prices on the higher scale. Crossbred wools, with the exception of the very finest qualities nearly approaching to merino in character, have, however, only been affected to the very smallest extent by the improvement noted above in the finer colonials; and, in fact, the inferior and coarser classes of crossbred wools, which have been in very large supply in London, have been a very slow sale throughout the series, and the tops produced from these wools could be procured in Bradford for slightly less money than at the beginning of the month. In sympathy with the lower crossbreds which come most into competition with them, all classes of deep-grown non-lustrous English wools continue in very poor demand, and there has been no improvement in prices. There has been a considerable amount of speculative purchasing of pure lustre wools, some of it coming from outside the ordinary channels of the trade, and as this has been of sufficient moment to affect local stocks, really bright wools are distinctly dearer. The prices of both mohair and alpaca are extremely firm, and although no recent sales of moment are reported, the holders of the sources of supply are so confident of the strength of their position that prices are not likely to recede at present. Spinners of mohair yarn are well employed and under contract for some time to come, either on home account or for the continent, but the trade in ordinary two-fold worsted yarns is still most unsatisfactory, as not only is the trade in both bundle and warp unusually small, but prices are also distinctly lower than ever before known. Representatives from the continental manufacturing centres have been very much in evidence with their collections for the next spring season, but, as far as I can learn, have not met with much success, except in plain goods of the bengaline and cashmere order, in which fabrics they seem to be still somewhat ahead of Bradford makers or dyers, or both. Bradford manufacturers are not yet ready with their new season's ranges, but some of the earliest of them are showing some very handsome novelties in black mercerised crepons, and the result of the experience of the past few seasons in the manipulation of the mohair yarns has enabled them to produce some most stylish effects. There is every appearance of tailor-made coat and skirt costumes being as much worn as ever, both in the coming autumn and spring seasons, and the unfilled and shower-proofed Bradford-made cloths have been so satisfactory in wear, that they are sure to be again in good demand. The end of the half-year seems to have resulted in several changes in the dress goods departments of the London houses, and there is also talk of changes and the discontinuance of certain departments in some of the provincial houses.

KIDDERMINSTER.—The local carpet trade has now reached the quiet period. The most satisfactory feature is that a consid-

erable number of repeats come to hand. Very soon manufacturers will be turning their attention to the patterns for the next season. We hear that trade in Scotland keeps very good, especially in tapestries. Local spinners are moderately well employed, but the orders received are just now of a hand-to-mouth character. One point is certain—the spinning trade here, bad as some people regard it, is just now better than it is in Yorkshire.

NOTTINGHAM.—The condition of the lace industry continues dull and unsatisfactory, and the past few days more machinery has been stopped; this time in the fancy millinery branches. A few lines in Valenciennes and Oriental goods are selling, but the demand is only for specialties, and even for these it is not strikingly manifest. Novelties are being withheld for the present. Buyers are watching the tendency of fashions; they profess to see evidences of a decided improvement for the autumn trade. There is little doing in silk laces. A few small orders have been placed, but production has rather decreased than otherwise. Silk veilings are selling rather more freely, but neither manufacturers nor chenillers are fully occupied. The depression in other branches has not influenced prices in the bobbinet, light tulle or spotted net branches. Orders are less plentiful, but the machinery is employed, and the market is free from heavy stocks. Stiff foundation nets are selling slowly, and there is a moderate demand for Bretonne, Mechlin and point d'esprit nets for millinery purposes. Lace curtains, window blinds, furniture lace, and toilets are steady, but machines are not all employed, current prices being too low to allow an adequate profit upon goods produced from second or third rate machines.

SOUTH OF SCOTLAND.—Depressing reports are to hand from the South of Scotland tweed districts. By all accounts this important industry is in a bad way. Orders are very scarce, and travelers state they are difficult to get. There is still a steady demand for worsteds and the better qualities of chevviots, but many of the looms not working these goods are idle. Although wool has advanced in price, there has been no corresponding improvement in the manufacturing business. Hosiery makers report that they are well employed.

KIRKCALDY.—The Kirkcaldy linen trade is not exactly brisk just now, and prospects are not so promising as makers would like. Any deficiency in this industry is made up by the floor-cloth and linoleum one, which continues in a most active state. One is almost inclined to wonder where the goods are to go, so great is the output at the Kirkcaldy factories.

BELFAST.—The holidays reduced the volume of trade in the linen market to small dimensions, but the tone of the market all round is of a more hopeful character. The weather has been good for the flax crop, and although the area sown is considerably below that of last year, which was very much less than its predecessors, there will likely be a good yield. More attention is being given to the manipulation and scutching of the flax, so that quality as well as yield, and consequently prices, will likely be higher than of late years. There is little animation in the brown cloth market. A steady trade has been passing in 38-inch powerloom linens for bleaching, both green yarn and boiled yarn qualities being in fair demand at late rates. For town-made goods there is a moderate inquiry. Unions are selling with considerable freedom, but cloth for dyeing and hollands is in dull request. With the approaching termination of the war between the United States and Spain, which is thought now to be within measurable distance, there is somewhat more activity in business with that country.

LYONS.—The Lyons market shows no change. A few buyers were present, but little business resulted, however, on account of the difference of opinion regarding prices. Several orders were submitted, but manufacturers declined to accept

them at the prices at which they were offered as the firm tone of the raw silk market renders it unadvisable to sell at reduced prices. The Spanish-American war has not produced the effect which was feared at its beginning, for although the volume of trade has decreased, prices have ruled firm. Work in the mills remains about the same as last reported. In the country a considerable number of looms are idle, but it is a regular lull, as many weavers are busy in the field. With regard to styles no change has taken place. Plain taffetas are continually sought, but mostly in grades and at prices which leave little profits. The demand for finished pongees has rather increased, and there are no stocks in the market. Small brocaded figures are coming more to the front, and small broche flowers in two and three colored effects are being liberally sampled. Looms for these styles are much sought, but only a limited number can be found. A better demand is experienced for plain cotton filled fabrics, principally satins, of which considerable quantities were bought in colored grades, the low priced qualities receiving the preference. The favorable outlook for velvets continues, and it is thought that the activity in this brand will still further increase. Good orders were placed for plain velvets in blacks and colors. The millinery trade has declared itself decidedly in favor of velvets, and will use large quantities, and with regard to dress trimmings the outlook is also much more favorable. Fancy velvets are much sought, but it is noticed that Paris shows some hesitancy in taking them up. The orders received are mostly from abroad, England being conspicuous as a buyer. The styles are mostly in ombre, raye or quadrille, while brocaded effects do not receive much attention. While in plain velvets blacks sell best, colored effects in fancies are principally sought. The demand for ribbons is daily increasing. Satin ribbons in good qualities sell very freely, and among the fancies stripes lead, while faconne styles are neglected. The demand for velvet ribbons continues heavy, both in blacks and colors, and some velvet ribbons with broche effects find buyers. The demand for mousseline ribbons has fallen off.

CREFELD.—This market has been very quiet; no buyers have been present lately and mail orders are insignificant. More activity will manifest itself when the travelers start next month for fall orders. The position of the mills has changed somewhat and is unsatisfactory. Many old orders have been completed, without the receipt of a sufficient number of new ones to supply the necessary work. The decline in activity has been very gradual, and at first failed to attract attention, but the feeling of cheerfulness has now to a large extent departed. Staple lines, which form the most important part of the work for the mills no longer find the liberal outlet and the mills are consequently forced to curtail production. Manufacturers making specialties continue busy, but they only employ a small number of hands. The best demand continues to come from the manufacturing trade. Lining silks continue in good demand, but materials for blouses are less sought, although there are no indications that these garments will be less popular than they have been. The principal fabrics are naturally taffetas, plain and fancy, which will continue to hold the lead for some time to come. There is, however, a change with regard to styles, and most of those in favor during the spring have disappeared.

For the present stripes and checks in new designs are sought exclusively, and opinions are divided as to the relative popularity of these goods. Brocaded figures are being more freely sampled. However, the old flower designs have been succeeded by small motives. Fashion seems to favor very small effects irregularly arranged over plain grounds. The good opinions of moires continues, and orders for moire velours, although at rather low prices, still figure prominently among silks secured for fall. The velvet trade has steadily improved. A great many orders have been received on plain goods, which will keep the mills busy during the greater part of the season.

It is, however, noticed that manufacturers producing low grades, especially those in the country, have met with better success than the houses making fine grades. But these latter have no reason to complain, and there is no longer any doubt that the velvet trade during the coming season will be decidedly better than during recent years. Orders for fancy velvets are quite numerous, especially from England and the home market, but some disappointment is felt that dealings have been almost exclusively confined to lowest grades. For this reason it is feared that the fancy velvet fashion will be of short duration.

ZURICH.—The deals in raw silk showed a marked falling off during the week under review, on account of the too rapid rise in prices, which local mills are not willing or in a position to follow. Lower prices had been expected with the appearance of the new silk, and some purchases had been delayed in this expectation. Present prices, therefore, are viewed with little favor, and hopes are entertained that a more favorable moment may present itself later on. The market is no doubt benefited by this attitude, as the requirements may soon become pressing. No nervousness is, however, displayed by the mills, the majority of which are provided for some little time. With regard to the work in the mills, no complaints are heard; on the contrary, there appears to be abundant work for the rest of the year, and it is only with regard to prices that business is not quite satisfactory. From Bale come favorable reports, there being a good demand for the different staple lines of ribbons. Better grades, however, appear neglected, and orders for fancy ribbons are not up to expectations. Broche styles in particular have not met with the expected demand.

CHEMNITZ.—Chemnitz is at present a pretty busy town. Although the shipments of goods are not very large, manufacturers have all the work they can do to get sample lines ready for the buyers who will not come across this season. During the last few weeks a good many orders for staple goods have been taken, and it looks as if the business would pick up quickly. If a large demand for staple goods should result, an advance of prices would very likely take place, as a good many machines have been changed to make fancy hosiery. As long as the mills can secure work of this kind they will not return to staple lines, as changing machines costs money and time, besides many working people have turned to other industries and help would be scarce. On drop-stitch and Richelieu ribbed goods, in fact, on all similar goods, longer deliveries will be called for, as the manufacturers cannot turn out enough of these. Herringbone soles will be one of the leading articles for the coming season, and heavy orders have been placed for the goods, buyers thereby providing for prompt deliveries. Maco foot hose will also be called for a good deal. In fancies an almost endless variety of styles is shown. Plaids are in only light demand, but the vertical embroidered stripes are still used for making the woven patterns more effective. Ombres and Roman stripes will also sell well, as will printed and embroidered goods. Lace hosiery, too, promises to play a prominent part in next season's business. For men's wear, herringbone soles will be in good demand, and lines of these goods at all popular prices can be found in the market. In fancy half-hose the more modest styles will be preferred. The contrary is true of ladies' goods, in which loud patterns find ready sale. Trade in silk-plated goods is very light, but finer grades of lisle hosiery are selling much better. In gloves business is fair. Buttons and clasps are called for mostly. Silk gloves are only selling in the better qualities, but taffetas are taking well in all grades; also taffeta imitations in lower-priced goods, where they will give much better satisfaction to the consumer than a poor silk taffeta costing the same price. For children's wear, button gloves will also be largely used, while for ladies' wear the larger percentage of goods ordered is for black. Misses' gloves are taken mostly in navy and seal. Bicycle and other sporting gloves are shown this season in a large variety.

HOW ODD LOTS OF YARN CAN BE UTILIZED.

A colored goods manufacturing concern, to be worked on a satisfactory remunerative scale, must have all details carried out with a view to the strictest economy, writes "Pick" in The Recorder.

The yarn room and the warping room of a mill are often the scenes of laxity, and accumulations of varied lots or small quantities of disused counts and colors are found to be of considerable dimensions in a short space of time. The accumulations may be the leavings of completed orders, occasional miscalculations, or the yarn may come from the dyers in a state not satisfactory for the particular work for which it was intended, and a second supply correctly dyed leaves the first quantity on hand. This first quantity is often returned to the dyer, and the price taken off his account; but in other cases the yarn is left on hand to be used at the mill. A few manufacturers rid themselves of these accumulations by making a warp from the oddments of warp yarn, and picking it with the oddments of weft. This cloth, with its often objectionable combination of colors, is sold to the female employees, who wear it over their aprons; but any intervention of this kind tends to create a loose, slovenly disposition, which should be studiously avoided in manufactories where neatness of work is essential. Also, this method of using up the odd yarns detracts from their selling price as compared to their use in marketable cloth. Striped goods allow of the introduction of a considerable quantity of threads of odd yarns at the edges of the colored stripes. Threads of indigo much lighter in shade than the body of the stripe would pass muster if placed at the edge of a blue stripe at the positions where it borders on to a stripe of white. Threads of from two to four counts finer than the body counts are used in these positions; also blue stripes edged with dark green may be inserted without any conspicuous results.

When cloths are built with a preponderant amount of weft, colors of even greater distinction may be safely introduced in the warp. The alien threads should be placed at regular intervals across the cloth, and not used lavishly at the commencement of a warp, compelling the use of another kind at the finish, as any irregularity serves to make their introduction more conspicuous. The Oxford weave of cloth allows of the introduction of these threads if heavily wefted; but if only lightly wefted it is dangerous to venture far, because the two working together occasionally change positions, and a thread which is light and intended to edge the white stripe may occasionally come second in position, and appear rather prominently. Sateens and similar warp-faced cloths should be treated cautiously, as they show up the imperfections of the warp so clearly; but designs containing narrow stripes of two or more threads may be treated in so far as these stripes allow.

Matting stitches and corded stripes are found very accommodating, as fewer threads of a coarser count, or more threads of a finer count, can be inserted without the least fear of detection. Very coarse counts may be used in place of two threads in the Oxford cloth, or a moderately coarse thread and a fine thread may be run together to substitute two threads of medium counts. For example: If an Oxford cloth be made from 32's counts of warp, and it contained a stripe the color of which was similar to that of some 24's, the 24's might be utilized by placing a thread of 40's as its fellow thread; the coarseness of these combined is so near that of two threads of 32's as to be unobserved.

In figured fabrics the weave of the cloth must be taken into account when introducing alien threads, because the weave has considerable influence in covering or disclosing the variations. In some weaves the edges of the stripes are thrown up very prominently, while in others they are subdued more than in the plainer weaves.

It is of great advantage to the management of the preparation department if the person in charge has some knowledge

and experience of the woven cloth, because, in addition to the placing of odd threads in positions least inclined to show them, any tendered or soft-sized yarns might be placed in positions the least likely to carry the strain of the warp, or be subject to an undue amount of friction in weaving. In the dobby Harvard shirting the figured stripe is often principally composed of the calico order of weave and requires a well-sized and strong thread, because the figured stripe threads interweave frequently, and, as a natural consequence, take up more yarn than the ground portion, and bear all the strain in pulling round the weaver's beam. Another design may have a figured stripe working four picks up and four picks down; this stripe would work slack and take a more tender or soft sized yarn, or if a four end matting is used a tender thread would be easily carried through its work along with three threads of ordinary strength.

The accumulations of weft yarns also require vigilant attention, especially in cases where self-colored cloths are manufactured. Spotted hanks or weft yarn, not even in color, would show their imperfections very clearly if woven into self-colored cloth, but these can be used in many small checked patterns without risk of injury to the cloth. If the weft is too fine for a suitable checked cloth, another thread (the counts of which will bring up the imperfectly dyed yarn to the required counts) may be doubled with the fine counts. A twill checked cloth is often treated with odd weft in this way, as it is fairly well covered with the warp. The advantage of using oddments of weft is the safety with which they may be used, because a few picks may be inserted as a trial before proceeding to weave a quantity. Dark green and indigo, prune and indigo, and other mixtures have been inserted (instead of a coarse indigo weft) in a twill cloth, and still the difference in appearance is very slight.

A novel mode of using very coarse indigo weft in a twill cloth is to place one pick in a bar instead of two, as originally intended. This is done in an ordinary check loom, provided with a dobby, by placing one pick in the cloth and the return pick on the top; all the healds are depressed, in order to allow this to take place. When the next bar of indigo is required, the first pick is sent over the warp, and the second pick is inserted in the cloth. The shuttle is arranged to put a quantity of drag on the coarse weft, sufficient to take up the loose weft on its second return; also, the temples require to be set a good distance back, to prevent them gripping the loose weft.

Soiled white wefts are often used in the small white bars of a checked pattern, an extra shuttle being employed for this purpose. The designer may be of great service if he is in touch with the practical work of the mill; because, when arranging new cloths, he can keep an eye to the introduction of those colors and counts of weft which are likely to accumulate from other cloths in course of manufacture; and especially when these are of solid color, as previously mentioned, the accumulations are generally large when the best results are acquired. In order to double the yarns (which are required to be used instead of a coarser yarn), one of the winder's pirns may be arranged to wind the weft from two pirns placed in a vertical position, a little tension being placed on the threads in their course. These threads will require very little attention, as the weft is very unlikely to break during the unwinding from the pirns. The system described necessitates twice winding of the thread, but the extra expense is more than recouped by using the weft to greater advantage.

If persistent advantage were taken of every opportunity for using up the accumulations of odd warp and weft yarns, and every attempt was made to keep down the causes of accumulations, the yarn room of many manufacturing concerns would be less crowded, and better order, system and economy obtained.

SOAP.

A MOST IMPORTANT ARTICLE IN TEXTILE BLEACHING AND COLORING.

Soap is a most important article in the textile bleaching and coloring trades, seeing that it is used in so many branches. remarks the Dyer and Calico Printer. Essentially it is a combination of fat and alkali, soda in the case of hard soaps, potash in the case of soft soaps. The fat varies in different kinds of soaps, but in the best makes is usually tallow, palm oil, olive oil, cocoanut oil, cotton oil, or linseed oil. The value of soap depends upon the oil or fatty matter used in making it. An olive oil soap is worth more than a tallow soap, and the latter more than a linseed oil soap. Cheap soaps are made from low-class oils and fats, while to cheapen them there is often used resin in place of the fats, while filling agents like starch and silicate of soda are often added. The bleacher and textile colorist wants a pure soap made without any of these fillings; in particular the calico printer requires that his soap shall be free from resin.

An analysis of a sample of soap will comprise the determination of the following constituents—fatty matter, alkali and water. The fatty matter may be present in two conditions, one as free fat, the other in combination (the combined fat) with the alkali to form the soap; the less free fat there is the more complete has been the saponification of the fat and the more perfect the soap. The alkali may also be present in two forms—free, which represents an excess of alkali used in making the soap; combined, that in union with the fat in the soap. The water is best determined by taking an evaporating basin, then placing in this 10 grammes of the soap in the form of fine shavings, placing the basin with its contents in a hot-air oven and kept at a temperature of about 220 deg. F. until it ceases to lose weight. The loss of weight represents the water present in the soap; the average quantity in a good hard soap is 25 per cent., some makes reach 30 per cent.; soft soaps contain more, usually about 50 per cent. The alkali and the total fat may be determined by the following series of operations: Ten grammes of the soap are dissolved by boiling with water; when a clear solution is obtained one or two cubic centimeters of an alcoholic solution of phenol phthalein is added, when if there be any free alkali present the soap solution will turn red; from a burette a standard solution of sulphuric acid is run in until the red color is destroyed, when the volume of acid solution used is noted; this, multiplied by 0.04, and then by 10, gives the percentage of free alkali present in the soap. To the same soap solution a little methyl orange solution is added, and the standard sulphuric acid solution run in until the color turns from yellow to pink. While doing this test, the soap solution should be kept hot. The volume of acid solution used, multiplied first by 0.023, and then by 10, gives the percentage of combined alkali (as the metal sodium) present in the soap. The less free alkali and the more combined alkali the better. There is then added to the soap solution a little more acid, so as to have an excess of acid present; the fatty matter of the soap is thrown up in the form of opaque curdy masses; there is then added a quantity of petroleum ether, which dissolves all the fatty matter; the mixture is now poured into a separating funnel, and the glass rinsed out into the funnel by using some petroleum ether. The contents of the funnel separate themselves into two layers, the lower one an aqueous one, the upper one an ethereal layer containing the fatty matter of the soap. By turning on the tap of the funnel all the aqueous layer can be run away.

Clean warm water is poured into the funnel to wash the other layer; the water is run off and the ethereal layer run into a weighed glass; this is placed first in a water bath and then in an air bath, and the ether driven off by heat, leaving the fatty matter behind; this is weighed, and the weight multiplied by

10 gives the percentage of total fat present. A good soap will contain 60 to 64 per cent. of fatty matter. The free fat, if there be any present, can be ascertained by taking the dried shavings of soap from the water determination, placing them in a Soxhlett fat extraction apparatus, and extracting for an hour to an hour and a half with petroleum ether; on evaporating off the ether in a weighed glass the free fat in the soap is left behind and can be weighed. In a good soap the whole of these constituents, as thus determined, should add up to 100, or even slightly above that number.

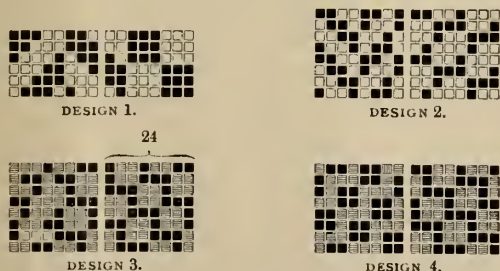
It would take up too much room to discuss the bearing of all the figures to be obtained on the quality of the soap for use, because the requirements vary in the different branches of the trade; the calico printer requires a more neutral soap than the wool scourer, while the fuller must use a neutral and non-fatty soap. One more point remains, and that is the question whether resin has been used. This is, perhaps, most conveniently determined by means of Gladding's test carried out in the following manner: Four grammes of the soap are dissolved in methylated spirit and boiled for a short time with the object of completing the saponification of any free fat that the soap contains; then a quantity of ether is added and a little powdered silver nitrate, the mixture is left for an hour, shaking at intervals; then it is filtered, the filtrate is put into a separating funnel with water and a little sulphuric acid, the aqueous layer is run off while the other layer is run into a weighted glass, and, on evaporating off the ether, the resin is left behind.

Soap should always be bought on a guarantee of containing a fixed percentage of fatty matter, free from resin or filling matter.

Textile Design

FANCY WOOLENS.

A few simple weaves useful for fancy woollens are supplied in Designs one to four. They may be successfully employed in either cheviot or Saxony yarns. Design 6 requires special treatment in the warp coloring. During the fifties fancy wool and silk twists were pretty extensively introduced into the better class of all-wool fabrics, and this is a design which, if used in woollens, should be developed on these lines. The four ends of upright twill ought to be fine twist yarn, preferably wool and silk or worsted and silk. In this way a smart and bright tone is given to the combination of the whole.



—Roberts Beaumont in the Textile Recorder.

ARSENIC IN WOOL.

The following letter from J. H. Pearse, president of the Kidderminster Chamber of Commerce, appears in *The Lancet* of June 9th:

To the Editors of *The Lancet*:

Dear Sirs,—Can you spare space in your valuable journal to ventilate the question of disadvantage or injury likely to arise or not from woollen apparel and other goods containing traces of arsenic? In Sweden there is a law against the sale of material containing arsenic in any way over a minute trace. Thus, yarn is not allowed to be sold in that country if it contains 0.0009 per cent. of arsenic—or 20 cwt. of yarn may contain up to 9 grammes

of arsenic—but if it contains more it will be condemned and not allowed to be sold. It is known that the Swedish Government have condemned a heavy carpet because it contained one thousandth part of a grain of arsenic in 16 square inches—that is, one grain (possibly in a completely non-volatile form) in a piece of carpet 10 feet. The Swedish law is a source of great trouble and annoyance to our manufacturers and merchants who do business in Sweden in the wool branches of the textile trade.

I believe it is nearly if not quite impossible to buy any sheep's wool (Home or Foreign grown) that does not contain arsenic in larger quantity than that allowed by the Swedish Government. This arises from the fact that all sheep growers are obliged at certain seasons to dip their sheep in a special chemical preparation to keep the animals healthy and in good order, and it is admitted that all effective sheep dips contain arsenic. Cooper and Nephew, of Berkhamstead, large manufacturers of arsenical sheep dip, state that they supply dip sufficient each year for one-fourth the sheep in the entire world, and they have proved by experience that their dip improves the fleece, and I understand that it is their opinion that one-half the woollen fabrics worn in England are made with Cooper dipped (that is arsenical dipped) wools.

The arsenic from the dip clings so tenaciously to the wool fiber, that even the two or three scourings with hot water—soap and alkali, together with the various other treatments and manipulations of carding, cobbing, spinning, dyeing and weaving, which the wool or yarn goes through before it becomes finished cloth, fail to destroy or get rid of the drug. It has been suggested to me that some of the readers of *The Lancet* may be in a position and willing to help the home trade, by giving information as to the injury or otherwise likely to arise from materials made from the wool treated as above-named, and as to the maximum quantity of arsenic that might be allowed without injury to health, in a given weight or size of cloth. Such information would I think be very valuable to all spinners and manufacturers engaged in the wool branches of the textile trades. I think it is well to add that the Swedish way of analysing for arsenic is described in *The Chemische Zeitung* of 1892, page 420. So far I have in a sense appealed to your readers only, but I am in hopes that you, Sirs, may also be induced to favor all interested in the matter with your opinions, which I am sure will be of considerable value. I am, Sirs, yours faithfully,

JOHN H. PEARSE,

President Kidderminster Chamber of Commerce.

THE CAUSES OF UNEVEN COLORS ON COTTON YARNS.

Although the causes of uneven shades on cotton yarns are legion, they may be discussed under three general heads, viz., the imperfect preparation of the yarn before dyeing, an improper condition of the dye-bath, and insufficient or careless working. To the first of these heads may be referred over one-half of the cases which perplex the dyer. As the first step in the production of an even color, the yarn must be thoroughly wetted out, which is done by boiling in clean water from two to four hours. No amount of care in the after processes can compensate for insufficient wetting out. The yarn should next be rinsed in the kier with several cold waters, and if not for black or very heavy shades, should be undone from the bundle and washed head by head in cold water. If the outer parts of the heads are allowed to dry before dyeing, says a writer in an English paper, they will show up much lighter at the last, for while they are being re-wet in the dye-bath the rest of the head is busily absorbing color. Where yarn has to be previously mordanted with sumac or some other form of tannic acid, great pains should be taken to secure a perfectly even preparation, as an uneven preparation will invariably produce an uneven shade. Then in the subsequent 'fixing' with salts of tin or antimony,

if an insufficient amount of the "fixing" substance be used, some of the tannin remaining loose on the yarn will "bleed" into the dye-bath, producing therein the insoluble precipitate which should be ingrained in the fiber, which not only tends to unevenness but wastes dye-stuff. If the yarn be given a heavier preparation than the shade needs on entering the dye-bath, the greater part of the color goes on one end, and the yarn appears "belted." If, after preparation the yarn is wrung for dyeing instead of extracted, care should be taken to wring evenly, as a "pinched" spot comes out light when dried. The bleaching of yarn for light shades is a prolific source of unevenness. If the bleaching liquor is not thoroughly washed out, or if the yarn is not properly scoured, or is not well washed after the scouring, the dyer will know of it later. Especially should the acid be washed out if the yarn is to be subsequently softened with soap, as any remaining acid would unite with the alkali of the soap, and the fatty acid thus liberated would form a "resist" on the yarn. So, too, if alum is to be used in the dye-bath, as with the cotton blues, the soap should be rinsed out with at least two warm waters, or the sulphuric acid of the alum will produce the same effect as the free acid of the scouring bath. As perfect evenness of the yarn is essential to an even color, so, too, is perfect evenness of the dye-bath. Spots, as distinguished from streaks, are generally caused by particles of undissolved color, by the insoluble tarry matter of some dye-stuffs, or by the scum which gathers on the surface of "standing" boxes. Careful dissolving of the dye-stuff, with stirring and subsequent straining of the solution through a cloth, will prevent any trouble from the first and second causes, and as for the last the first step toward the use of a "standing" box should be the careful removal of all scum from the surface. It ought not to be necessary to say that a dye-bath should be thoroughly raked and stirred up at the start, and after each addition of color; but a workman's carelessness or negligence in this may work much mischief. Many colors which work very unevenly at a high temperature may be got perfectly in a cold or tepid bath. The proper heat is only to be determined by experiment, but it is always safe to begin with a cold bath. If proper care is exercised in the preparation of the yarn and of the dye-bath, careful work alone is necessary to produce an even color. On entering the dye-bath the yarn should always be worked rapidly for a few minutes, and the same after each addition of color. If the yarn is to be washed, the washing should not be postponed until the dye-liquor has drained into the lower part of the yarn, but should be done immediately, and with proper care in extracting and spreading on the drying poles there is no reason why the finished product should not be perfectly even and level. Thus it is seen that constant care is necessary in all the stages of the work, for carelessness, in one form or another, is the only cause of uneven colors on cotton yarns.

TEXTILE IMPORTS FROM GREAT BRITAIN.

The following are the sterling values of the textile imports into Canada from Great Britain for June and the six months to June, 1897-1898:

	Month of June.		Six months ending June.	
	1897.	1898.	1897.	1898.
Wool	£3,877	£1,841	£11,991	£22,953
Cotton piece-goods	18,299	26,335	200,720	238,565
Jute piece-goods	14,327	12,998	54,087	67,977
Linen piece-goods	8,735	8,892	58,077	67,697
Silk, lace	277	232	2,922	4,181
" articles partly of	655	1,327	8,302	11,081
Woolen fabrics	15,881	18,218	102,429	109,426
Worsted fabrics	47,225	31,202	275,417	282,824
Carpets	4,244	6,962	81,632	99,288
Apparel and slops	14,029	16,284	132,110	154,892
Haberdashery	4,764	3,665	75,901	76,988

FABRIC ITEMS.

T. H. Reid, formerly traveler for Murdoch's Nephews, Halifax, N. S., has taken a position on the road for J. Vassie & Co., St. John, N. B.

The John D. Ivey Company, Ltd., Toronto, incorporated by Ontario letters patent, will do business in Montreal with John D. Barry and Company as agents.

Ferdinand Cloutier, the Winnipeg merchant who was brought to Montreal in June for trial on a charge of obtaining \$10,000 worth of goods from Montreal firms under false pretences, has been acquitted.

Z. Paquet, the great St. Rochs dry goods dealer, has retired, upon a fortune said to considerably exceed a million dollars. His extensive business will be continued under the same style by his son, the new senator, the Hon. J. A. Paquet.

A shocking bicycle accident occurred in Montreal, July 30th, by which Harold Wright, a young man in the employ of Horsfall Bros., clothing merchants, of 1851 Notre Dame street, lost his life, being crushed beneath a street car. The deceased was the son of David Wright, the cashier of the Canada Life Insurance Company, Montreal.

Upon the demand of the Central Thread Agency, an assignment has been made by Tanguay & Beland, jobbers in fancy goods, Quebec city. The firm has been in existence only since January, 1897, when they succeeded to Beland & Vezina, who failed just previously. Mr. Tanguay had been in the retail dry goods business unsuccessfully.

The wholesale millinery firm of Reid, Taylor & Bayne, Toronto, is under a cataclysm of law suits, there being no less than five suits in progress. Three actions are by members of the firm against each other, and two are by the Quebec Bank against the firm. The firm was established in 1886, and at the time of its legal difficulties its assets were valued at \$200,000.

Judge Falconbridge reserved judgment in the action brought by the Quebec Bank to have a receiver appointed for the interest of Hugo Block in the estate of Reid, Taylor & Bayne, and for the immediate realization on the assets. The petitioners applied for a receiver on the ground that there were inward dissensions in the firm, and that the partnership would soon be dissolved. Ample evidence was put in to show that these allegations were untrue, as the assets of the firm were \$102,000, while the liabilities were but \$35,000. Messrs. Taylor and Bayne opposed the sale of the assets at the present time, as they would not realize their full value. John Rennie, another creditor of Mr. Block, opposed the sale for the same reason.

The Montreal Gazette says: The perfect understanding and good feeling that has existed for many years past between the French-Canadian residents along the Lower St. Lawrence and their English-speaking friends who pass the summer season at the different Canadian watering places, received a splendid exemplification the other day at Notre Dame du Portage. Mr. and Mrs. Charles S. J. Phillips, of this city, who have had their summer cottage amongst these worthy people for over twenty years, have just celebrated their silver wedding, and one of the most welcome and touching expressions of good will received upon the occasion of this happy anniversary was an address from Madame Nadeau (a near neighbor), her family, and other friends. The Phillips family belong to the Baptist communion, yet this fact did not prevent the beautifully-worded address from being composed by a member of the French Catholic clergy. The above incident refers to Mr. Phillips of the well-known stationery firm of Morton, Phillips & Co.

In connection with the failure of the W. E. Gillespie Co., limited, of Penetanguishene, W. E. Gillespie, who was arrested on a charge of false pretences in obtaining goods from Thibaudau Bros. & Co., Montreal, applied for a writ to obtain his release, but the application was refused, and he remains in jail. A short time ago he claimed a surplus of \$6,000, but when the assignment was made the liabilities were found to be \$17,710 with assets about \$2,700. Among the dry goods creditors are: From Montreal, Thibaudau & Co., \$7,000; M. L. Schloman, \$324.22; W. Agnew & Co., \$273.05; James Coristine & Co., \$172.07; John Horsfall & Sons, \$120. From Hamilton, Knox, Morgan & Co., \$495.53. From Toronto, S. F. McKinnon & Co., \$1,500; Lailey, Watson & Co., \$833.29; W. E. Chalcraft & Co., \$277.70; A. A. Allan & Co., \$261.13; H. Bradshaw & Sons, \$223.33; E. J. Dignum & Co., \$133.86; E. Boisseau & Co., \$106.90.

SHEEP WITHOUT WOOL.

The principal kind of meat consumed by the people of Arabia, both native and foreign, is the mutton of the Somali, or black-head sheep, and, no matter by whom eaten, all pronounce it the best mutton ever tasted. This sheep, as its name indicates, is from the Somali country, on the African coast. These sheep have no wool, but short, fine hair, similar to that of the dog. The most peculiar thing about them is that they have a large lump of pure fat growing right at the root of the tail, and this fat varies in size and weight according to the condition of the sheep. A medium-sized lump of this fat weighs about four pounds. Such a sheep, which weighs from 35 to 40 pounds, is sold at from 4 to 5 rupees (85 cents to \$1.05). The skin, when sun dried, is exported, and large quantities of them go every year to the New York market, where they are known as "Mocha skins," but like the "Mocha coffee" of commerce, this is merely a term and nothing else. In 1897 these skins were imported into New York to the value of \$628,226.

LITERARY NOTES.

The midsummer number of the Canadian Magazine is one of more than usual interest. Much of it is Canadian, and the things Canadian are not those matters of every day whose description, unless done by a master hand, is a weariness, but are bright pictures of things so unusual as to be fascinating, or else having the charm of long ago about them. Of these the most pleasing are by Wm. McLennan and W. A. Fraser.

We have before called attention to the excellent work done for the United States Government by Charles Richards Dodge, special agent in charge of investigations relating to fiber plants. Mr. Dodge has reported on the possibilities of developing in the United States the culture of ramie, manilla, sisal, and other plants of the hemp character, and in a pamphlet of 80 pages, he now gives us an instructive account of the growth and manufacture of flax as carried out in the United States and in Ireland and Holland. Comparisons are made from a purely agricultural standpoint of the value of flax as against other grain crops, and an account is given of the methods of cultivation adopted in the northwestern states and in the State of Washington on the Pacific Coast. The subject is illustrated with several photo-engravings, depicting flax farming in Minnesota and other places. Mr. Dodge's excellent reports are an example to our Canadian Department of Agriculture.

The August number of *The Century* has a number of features of special timeliness, notwithstanding which the endeavor has been made to keep up *The Century's* standard in engraving and printing. Mrs. Mary Bradford Crowninshield writes a striking romance of a Spanish-American dictator, the title of her story being "Sangre de Cristo." Frederick A. Ober, late

commissioner in Porto Rico for the Columbian Exposition, contributes a paper on "The Island of Porto Rico," in which he describes the characteristics of the land and the people, and tells of the vast resources of the island. Osgood Welsh, an American sugar-grower, brings out new facts in "Cuba as Seen from the Inside." Both of these articles are fully illustrated. Walter Russell gives the impressions of "An Artist with Admiral Sampson's Fleet," with sketches from nature of bombardments and the capture of prizes. Surgeon-General George M. Sternberg, of the United States Army, discusses "The Sanitary Regeneration of Havana." Dr. Sternberg believes that it is possible to stamp out yellow fever and other epidemic diseases, but that the task will be one of great magnitude and expense. Hon. Frank A. Vanderlip, assistant secretary of the treasury, presents "Facts About the Philippines, with a Discussion of Pending Problems." Wallace Cumming, an American business man, pictures "Life in Manila," and there is reprinted from one of the first numbers of *The Century* an amusing article called "A Middy in Manila," written by Frederick H. Paine. The destruction of the Spanish fleet in Manila Bay is described by three eye-witnesses, there being narratives by Col. George A. Loud, Dr. Charles P. Kindleberger, junior surgeon of the "Olympia," and Joel C. Evans, gunner of the "Boston." There is also given Col. Loud's diary, written during the battle. The series of papers on Confederate Commerce-Destroyers is brought to an end with accounts of the cruise of the "Georgia," by James Morris Morgan, and of the "Shenandoah," by John Thomson Mason. Gustav Kobbe tells of "The Trumpet in Camp and Battle." A second paper by Herbert D. Ward on "Heroes of the Deep," is illustrated by Varian. Andre Castaigne pictures two more Wonders of the World, the statue of Zeus and the Mausoleum; Timothy Cole engraves one of Sir William Beechey's pictures, and there is a fine reproduction of one of Gilbert Stuart's portraits. "Mark Twain" is represented by a characteristic article, "The Austrian Edison Keeping School Again." E. Kay Robinson tells "How India has Saved her Forests."

CANADIAN TEXTILE PATENTS.

The following Canadian patents of textile interest have been recently granted:

- No. 59,475.—Garment support; Geo. McKnight, Toronto.
- No. 59,479.—Improved corset; Franklin Kellogg Hicock, New Haven, Conn.
- No. 59,547.—Art of waterproofing fabrics; Lyman Prentice Converse, Chicago, Ill.
- No. 59,587.—Waterproofing composition; Chas. James Grist, London, Eng.
- No. 59,714.—Improved loom; William Weaver, Norwalk, Conn.
- No. 59,715.—Improved loom; William Weaver, Norwalk, Conn.
- No. 59,806.—Fabric cutting tool and method; Charles William Cohn, New York, N. Y.
- No. 59,832.—Stiffening fabric; Edward Kirk Warren, Three Oaks, Mich.

THE WOOL MARKET.

Montreal.—All fine merino wools are advancing. Fine qualities Cape and B. A. pulled are $7\frac{1}{2}$ to 10 per cent. advance, but the manufacturers are all buying sparingly, as they say they cannot get any advance on their manufactured goods. Since the war was at an end a firmer tone prevails in the States markets. The advance in London and France is quite 10 to 15 per cent. on all merino wools.

Among the Mills

Co-operation is one of the guiding principles of industry to-day. It applies to newspapers as to everything else. Take a share in "The Canadian Journal of Fabrics" by contributing occasionally such items as may come to your knowledge, and receive as dividend an improved paper.

L. H. Lemoine is travelling for the Anchor Knitting Co., Almonte, Ont.

The Brantford, Ont., cordage works, closed for the season, July 25th, throwing 50 hands out of work.

W. Andrews & Co.'s woolen mill, Thornbury, Ont., was burnt down some time ago; loss over insurance was \$5,000.

The Middleton, N. S., Clothing Co., Ltd., has been incorporated to manufacture and deal in clothing; capital, \$5,000.

The carpet machinery and stock of Ward & Co., Elora, Ont., is still for sale in the hands of Henry Barber, Toronto.

The Berlin, Ont., Brush Co. has assigned to C. S. Scott, Hamilton, Ont., as the result of the losses from the recent fire.

A joint stock company is being organized to do a provision packing business in the buildings of the Weston, Ont., woolen mills.

The Sherbrooke Yarn Mills Co., burnt out June 15th, is selling off the machinery saved from the fire, and will not resume business.

The St. Croix Woolen Manufacturing Co., of Newport Station, N. S., whose mill is at present closed, may succeed in re-organizing.

Telfer Bros., Collingwood, Ont., lost about \$500 in a small fire in the bleaching house of their Clarksburg, Ont., woolen mill, July 15th.

The name of the company owning the St. Croix Paper Mills, has been changed to the St. Croix Paper Mill Co., Ltd., H. McC. Hart, manager.

The International Tent Manufacturing Co., Ottawa, is said to be doing quite an extensive business in various cities in the United States in British flags.

M. B. Perine & Co., Doon, Ont., have this year manufactured a large quantity of binder twine from flax owing to the scarcity of manilla and sisal.

The St. Lawrence Blanket Co., Gananoque, Ont., organized less than a year ago to manufacture blankets for the Klondyke trade, is now winding up business.

The John Routh Woolen Mill at Campbellford, Ont., is for sale by Geo. Reid & Co., Toronto. The water power on this property develops 75 horse-power.

John Houston, who has filled the position of watchman in the Mississippi Woolen mills, Appleton, Ont., for a score of years has been succeeded by John Hall.

John Moore, rubber manufacturer, died suddenly a short time ago at the residence of his son, J. B. Moore, Boston, Mass. He was formerly a resident of Toronto.

Dick, Ridout & Co. are now running their bag mill at Cebourg, Ont., in a new brick building erected during the past month. The woolen mills will be running by October 1st.

Nathan Uttley, who has been for seventeen years engineer of the Waterloo woolen mills, and ranks, with his wife, among Waterloo's most highly esteemed citizens, celebrated his silver wedding recently.

J. Moore, W. A. Magor, L. H. Gault, W. C. Finley and C. A. Duclos, Montreal, have applied for a Dominion charter as the Moore Patent Pocket Co., Ltd., to manufacture clothing and tailors' devices.

The Glen Tay, Ont., woolen mills are for sale, and have been placed in the hands of Geo. Reid & Co., Duke street, Toronto. This property has a water power which develops 200 horse-power.

Quite a stirring industry is furnishing employment to a lot of people over in Yarmouth, N. S., caused by the drying up and shipping of eel grass. It is used for making certain classes of paper and for sheathing purposes.—Fredericton Reporter.

The Hope woolen mill, Garden Hill, Ont., will probably be operated in future by a joint stock company, which is being organized for the purpose. A high class of tweeds will be manufactured and Canadian wool will be used exclusively.

Henry Scott, formerly employed in the Brodie Co.'s mills, Hespeler, Ont., who about June 1st started up at Guelph, Ont., as a hosiery knitter, operating three hand machines, has decided to close down his business in Guelph, and may return to the employ of the Brodie Co.

Wm. Graham, whose manufacturing experience is of much value in aiding in the selection and buying of wools, is now doing business as a wool merchant, handling both foreign and domestic wool. His offices and warerooms are at 54 and 56 Wellington street east, Toronto.

Robert Mercer, Almonte, Ont., arrived home last week from Massachusetts, where he was engaged in one of the big factories for a time, but it has closed. Mr. M. says the war is playing havoc with the manufacturing industry in Uncle Sam's domain.—Almonte Gazette.

Julia Reverski, who operates a loom at the Waterloo, Ont., woolen mills, contrary to the rules of the factory, recently tried to clean her loom while in motion. The waste she was using caught in the gearing and drew in her hand, crushing it badly, one of the fingers having to be amputated.

The many friends of Geo. W. Ward, of Alton, Ont., and formerly superintendent of the Almonte Knitting Co.'s mill, will be sorry to hear that his health has of late been a source of alarm to his relatives. It is a continuation of the illness from which he suffered before he left here.—Almonte Gazette.

The Dominion Cotton Company, in applying to the Kingston council for a bonus of \$25,000, promised to employ 250 hands, at an annual wage of \$90,000; to spend \$150,000 on new plant, and run every working day in the year except fifteen days. The terms were accepted by the council, which made a stipulation for indemnity in case of breach of the agreement.

J. J. Westgate, C. L. Higgins, Montreal; B. W. Higgins, H. E. Higgins, St. Paul, Que.; R. Lucas, Lachine, Que., have been incorporated as the Hudson Bay Knitting Company; capital, \$50,000; headquarters, Montreal, to manufacture and sell knitted goods and other articles of clothing, and all kinds of rubber, woolen and cotton goods and boots and shoes.

Wool Washers

Dryers and Carbonizers

KITSON

MACHINE CO.

LOWELL, MASS.

The Bluevale, Ont., flax mill has commenced operations.

Improvements have lately been made on the Tay Knitting Mills, Perth, Ont.

W. Cairns, Berlin, Ont., is having a new electric motor put in his glove factory.

The Empire Carpet Company, of St. Catharines, are at present running overtime.

The Port Dover, Ont., knitting mills are being equipped with some new machinery.

The new wing to the C. Turnbull Co.'s knit goods factory at Galt, Ont., is almost completed.

Taylor & Rouse, manufacturers of laundry machinery at Brantford, Ont., are looking for larger quarters.

D. Dunlop, formerly of the Gillies' woolen mills, Carleton Place, has left to take a position in a similar establishment at Dryden, N. Y.

Currie Nelson, an employee in the Woodstock, N. B., woolen mills, had his hand badly lacerated while tending the carding machine.

An action for \$3,000 damages has been taken out by Robert Hill, who was injured some time ago at the mills of Adam Lomas & Son, Sherbrooke.

W. H. Kennedy, cutter in Thompson & Smith's clothing establishment at Ingersoll, Ont., has gone into partnership with Geo. Tolton, clothing manufacturer of Galt.

J. T. Wood is considering the question of removing his knitting factory from Rockwood, Ont. Mr. Wood at present operates fourteen hand machines on hosiery, underwear and glove linings.

There are prospects of an immense pulp mill being established on the Ashland branch of the Bangor & Aroostook railway. The proposed industry contemplates the employment of nearly 1,000 men.

Johnnie Kanapin, a spinner in the A. W. Brodie mills, Hespeler, Ont., had the misfortune on Aug. 3rd, to get his left hand in the gear of the machine, and had his second and third fingers taken off.

The new crop of flax having matured, most of the flax mills of Ontario have started manufacturing operations for the season. We understand the yield of flax is good, except that sown on low lying lands, where it is a failure.

Alfred Parker, who has been for many years well known to the woolen manufacturers of Ontario, with whom he did business under the firm name of the New Toronto Wool Stock Co., died at his home in Toronto, July 29th. Mr. Parker was an Englishman, and formerly lived in Batley, Yorkshire. He was a prominent Mason, and was very popular among his friends, as he was a fine singer, and possessed a good voice.

The Lancaster Machine Works are manufacturing for the Canadian Colored Cotton Mills Co. several large stock dyeing machines.

George Morrison, boss carder in the Hawthorne mills at Carleton Place, Ont., has gone to Montreal, where he purposes going into business for himself.

The proprietor of one of the St. Catharines knitting factories has been fined \$10 for employing girls and allowing them to work more than sixty hours per week. The Inspector of Factories was the complainant.

The Archibald Company, Ltd., Truro, N. S., has applied for incorporation to carry on a wholesale business in gents' furnishings, hats, caps, furs, straw goods; capital, \$25,000. The provisional directors are J. H. K. Mack, W. F. Mahone and E. M. Fulton.

The Kennedy Co., Ltd., has been incorporated to manufacture clothing, hats, shoes and shirts in Montreal; capital, \$100,000. The incorporators are: K. E. Kennedy, Chas. A. Barnard, H. W. Beatty, A. E. Paris, Montreal; J. A. Richard, Winnipeg, and J. Tessier, Quebec.

There was a strike in the Montreal cotton mills at Valleyfield, Que., July 20th, by which 600 operators were affected. The mill had been closed ten days for repairs, and the management wanted the employees to work half an hour a day overtime to make up for the lost time. The weavers objected. Finally it was agreed that they should put forth extra exertions to catch up with the work during the regular hours.

POSITION WANTED—Young man of good education, at present employed as superintendent in a large woolen mill in the south of Scotland, would like similar position in Canada. Can assist in designing. Address "SUPERINTENDENT," care of Canadian Journal of Fabrics, Montreal, Que.

WILL shortly open Manufacturers' Agency in Montreal. Have you any specialty you want me to handle? Thirteen years' experience in a general store in Canada; fourteen in the general dry goods trade in the U. S. Speak English and French. Am a pusher. **EXPERIENCE, ENERGY,** care Canadian Journal of Fabrics.

BOSS CARDER or second hand in card room woolen mill; has had ten years' experience on all classes of goods and cards and feeds. Will go anywhere for a permanent position. Address W. R., care Canadian Journal of Fabrics.

SITUATION WANTED

Wanted situation as manager or superintendent of woolen mill by a man who has had a large and most successful experience on shoddy goods. Married; 39 yrs. of age. Address J. E. C. L., care Canadian Journal of Fabrics.

SITUATION WANTED

Experienced long chain dyer and yarn printer desires situation. Fast colors. Economical. Nine years with leading gingham, shirting, and fancy cotton, woolen and silk dress goods mill in New England. Age 39. Married, Address "M," care of Canadian Journal of Fabrics.

Wanted

By experienced Cotton Bleacher and Finisher, situation in Canadian mill. Best of references covering a long period of years. Age forty. Married. Apply "WEST POINT," Care Canadian Journal of Fabrics.

The Royal Electric Co.

CANADIAN MANUFACTURERS OF THE

MONTREAL
TORONTO

S. K. C. TWO-PHASE APPARATUS

Alternating Current Generators
Alternating Current Motors

Alternating Current Arc Lamps

Served from the same circuit

S. K. C. TRANSFORMERS

Correspondence solicited for all kinds of Electric Installations.

Chas. Woodward has left Waterloo, Ont., for Ingersoll, where he has secured a position in the Ellis Upholstering Works.

A young lad named Philip Pinault had one of his arms broken in the Canada Cotton Mill, Cornwall, Ont., recently. He was riding up on the elevator and when he came to one of the landings he went to get off and his arm was caught between the doors and broken.

The Chatham, Ont., police have arrested Ira Fields and John Butler, of Chatham Township, charged with robbing the T. H. Taylor Co.'s woolen mills in Chatham last November. A large quantity of stolen goods was found in their possession. They have been found guilty and have been sentenced to three years at Kingston.

It is nearly thirty years since Charles F. Taylor, of Providence, R. I., introduced his cop tubes into the cotton mills of the Dominion. The quality of the tubes has been strictly maintained. The tubes commend themselves both in the mule-room and weave-shop by their economy in use, as is shown by the cop tube accounts of mills using these tubes exclusively. They certainly tell their own story in use and do not go back on their records of the past 30 years.

—The whole of China will be opened to foreign trade within a few years' time. That portion of the empire which falls within

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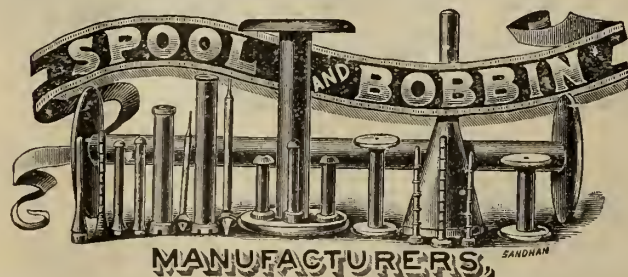
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the influence of Great Britain comprises the heart of the country. The valley of the Yang-tse-Kiang is not to be alienated to any other power. In other words, Great Britain holds a political mortgage on it, on which that country may in time be forced to foreclose.

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Bleaching powder	\$ 1 95	to \$ 2 00
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Sal soda	0 70	" 0 75
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Caustic soda, 60°	1 75	" 1 80
Caustic soda, 70°	2 00	" 2 10
Chlorate of potash	0 13	" 0 15
Alum	1 35	" 1 50
Copperas	0 70	" 0 75
Sulphur flour	2 00	" 2 50
Sulphur roll	3 00	" 3 50
Sulphate of copper	4 50	" 5 00
White sugar of lead	0 07	" 0 08
Bich. potash	0 09	" 0 10
Sumac, Sicily, per ton	55 00	" 60 00
Soda ash, 48° to 58°	1 25	" 1 50
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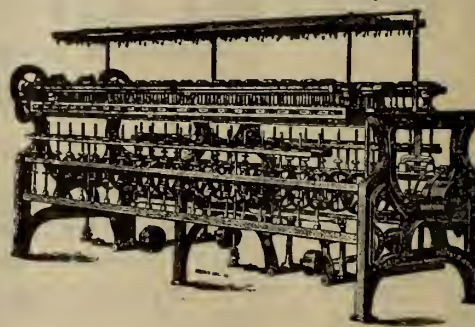
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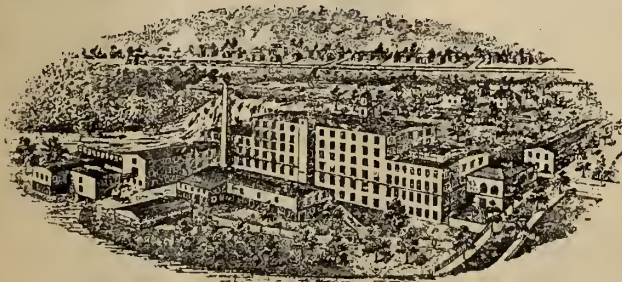
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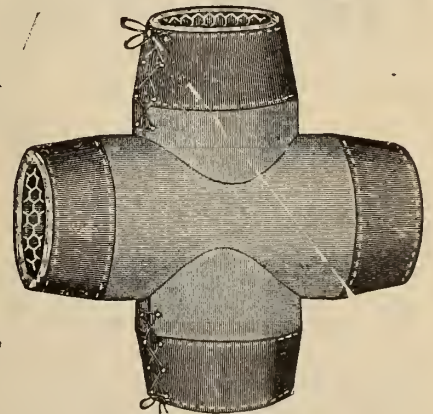


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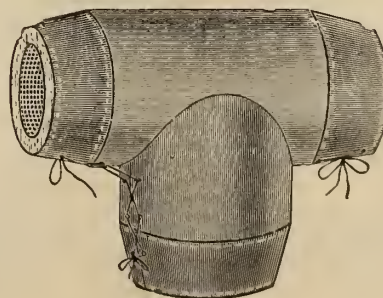
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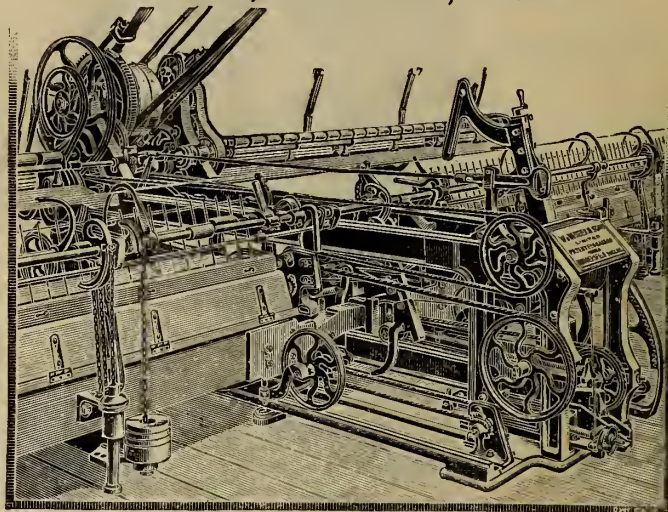
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Carding or Fulling Mills: Name; address; capacity; date established; and whether steam, water or electric power.

Cordage and Twine, Jute and Flax Mills: Name; address; date established; capacity; steam, water or electric power; kind of goods made and material used (whether cotton, hemp, flax, etc.); selling agents, if any.

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Fur Manufacturers: Name; address; kind of goods manufactured, and whether selling to the wholesale or retail trade.

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It was an angry farmer who, in response to a letter saying that a large shipment of wool made by him was under weight, visited the city the other day for the purpose of seeing his wool weighed. The sacks were all in place and as one after another was put on the scales showing but little variance from the weight marked on the bags, an "I told you so" look beamed on the farmer's face. "This is wool from my own sheep," he declared, "and was carefully weighed in my presence. I knew it must be right." "But," the merchant said, "wait a bit." And soon the latter had his innings. Sack after sack went on the scales only to discredit the weights which were marked upon them. "That wool is from my neighbor ——'s sheep," cried

the amazed farmer. "It was good weight the day I bought it, for it went on the scales with these other sacks," pointing to those which had passed the test. "Has your neighbor a damp cellar and a good pump?" grimly remarked the merchant. "The villain! He watered the wool," shouted the farmer as he made for the door. We are looking for the report of a family feud, which must appear in a certain country newspaper, the details of which will put "Soapy" Smith's experiences in the shade.—Monetary Times, Toronto.

The picker cylinder in F. Scantlion's shoddy factory, Almonte, Ont., burst a short time ago from an unknown cause, wrecking the machine and damaging the building. Fortunately none of the operators were near and so escaped injury.

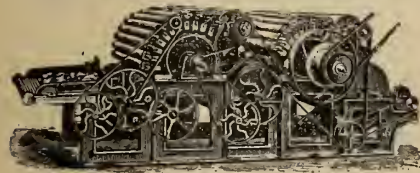
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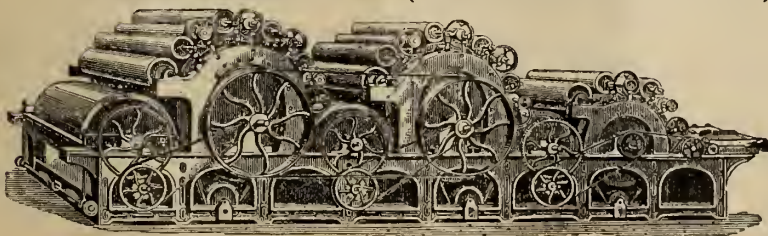
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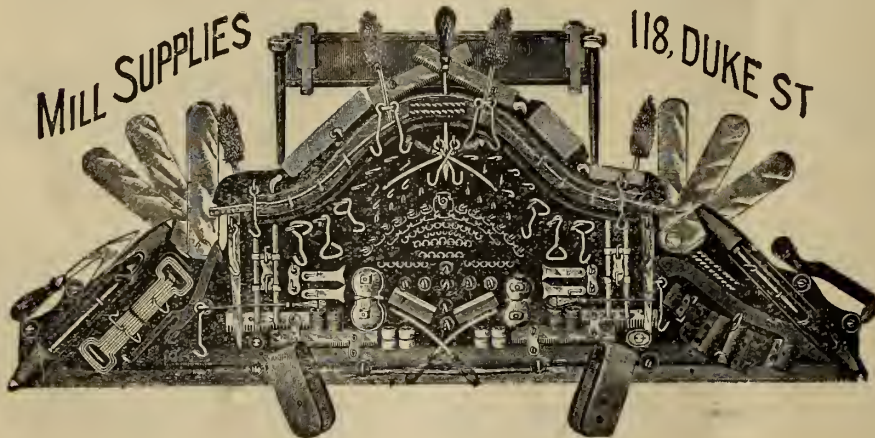
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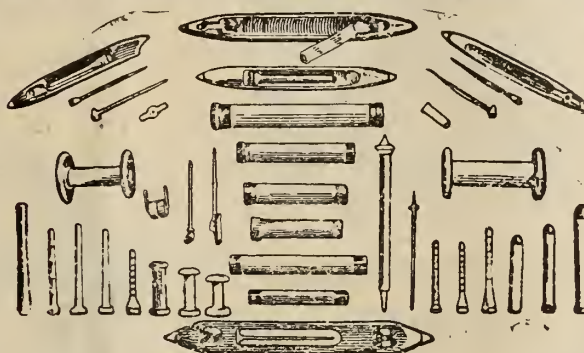


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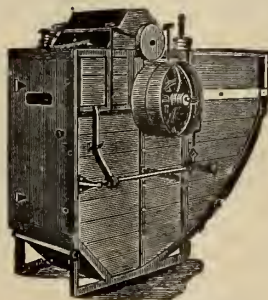
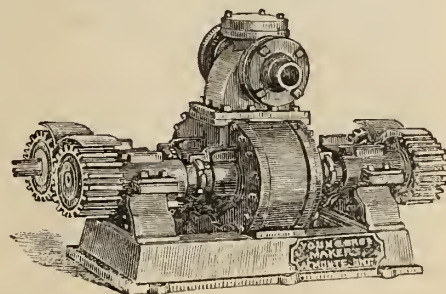
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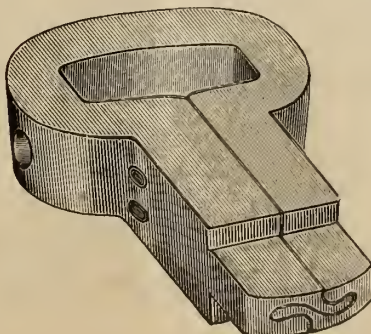
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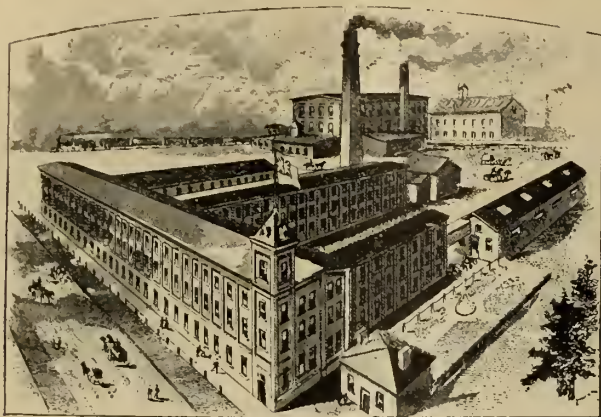
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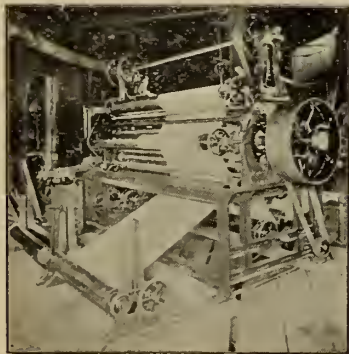
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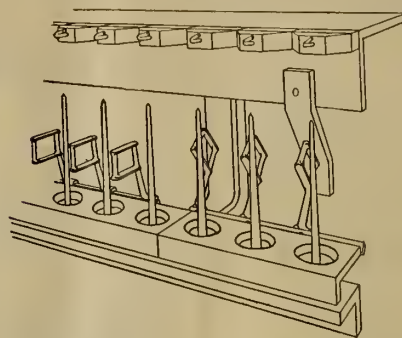
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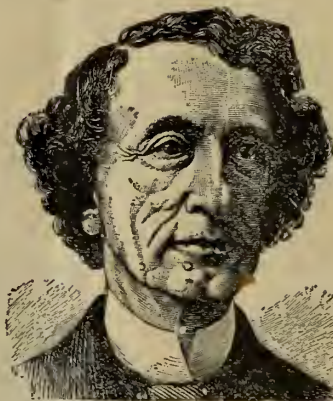
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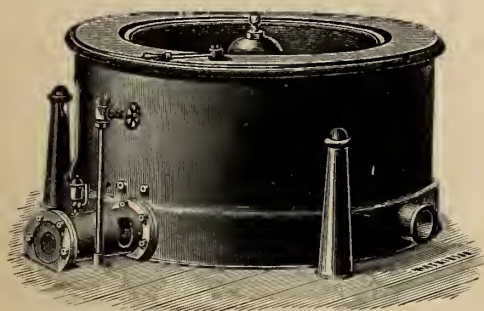
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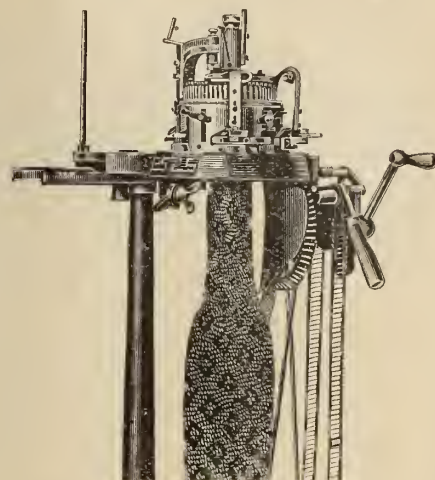
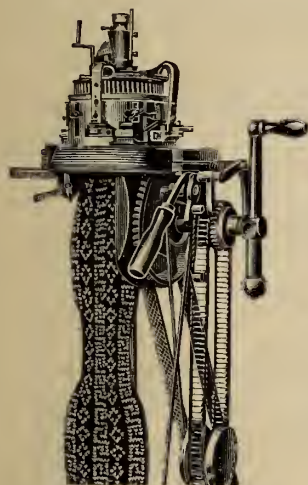
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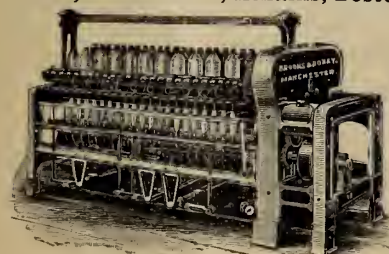
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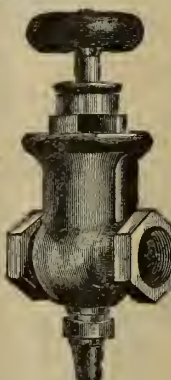
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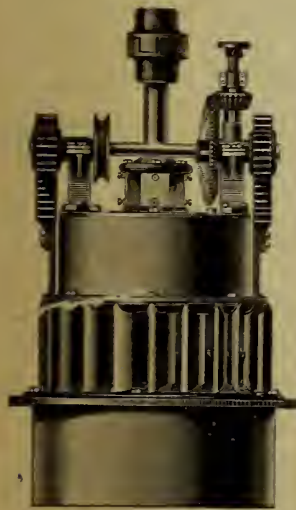
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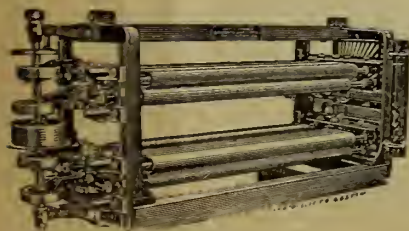
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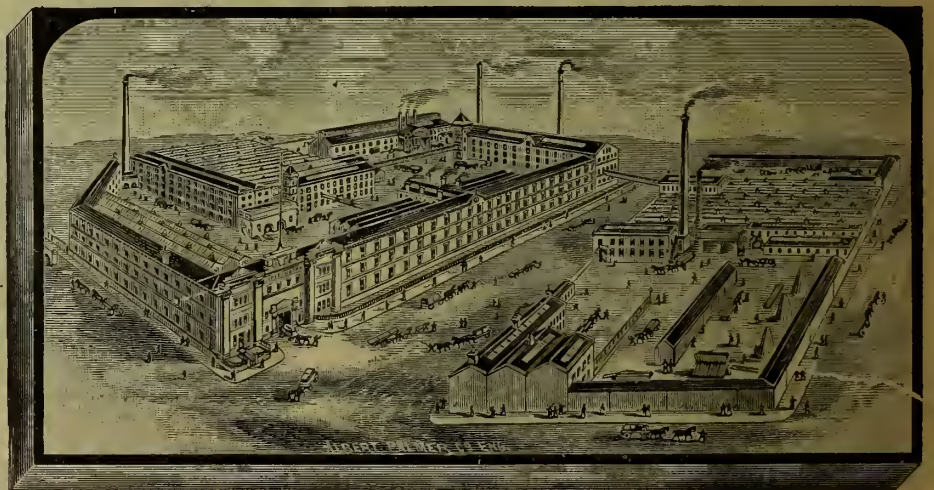
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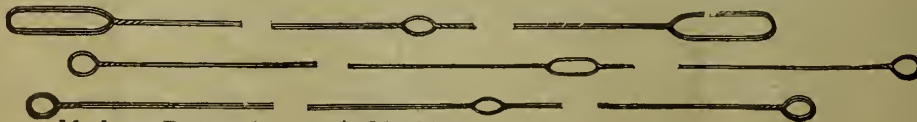
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